Pit and Quarry

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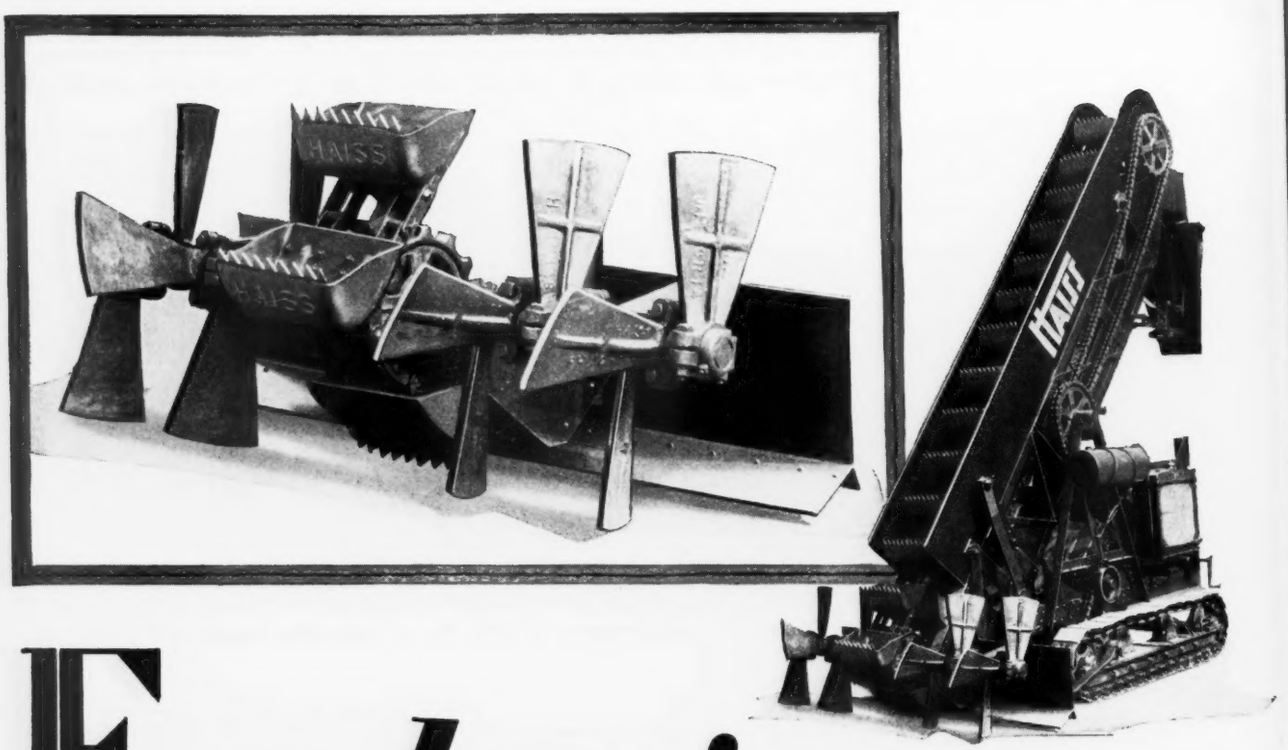

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Pit and Quarry

Vol. XVIII CHICAGO, ILL., JUNE 5, 1929 No. 5

MEN OF THE INDUSTRY

The portrait printed on this page in each number of PIT AND QUARRY is taken from our files and its selection is without significance as to current events or as to the position of the individual in the industry.

George M. Block

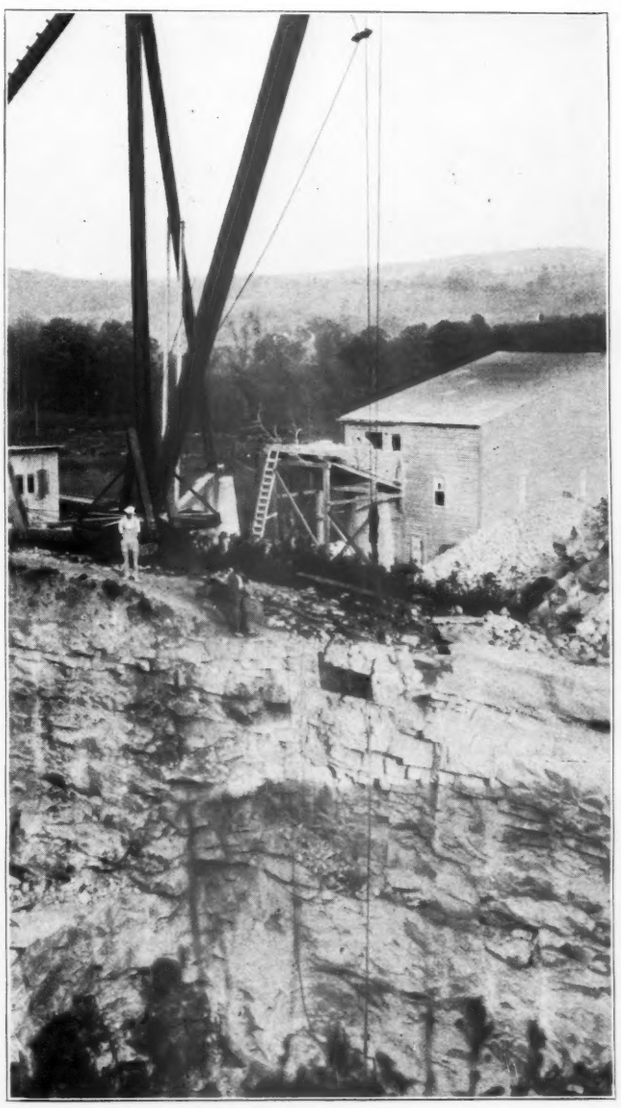
Mr. Block is Vice-President
of Missouri Portland Cement Company
St. Louis, Missouri

New Crushed Marble Operation in New York State

By GEORGE RANSOME

A NEW plant manufacturing all sizes of crushed marble was started about one year ago at Patterson, New York, by Ralph Scaperotta. It is owned by the Tuckahoe and Patterson Marble Corporation. In addition to material for cast stone, stucco dash and the like, a good quantity of ground stone for agricultural purposes is turned out, as well as a coarse stone for driveways. The production is from 50 to 70 tons per day with a force of ten men. The plant is well laid out and is equipped with modern electrically-driven machinery. The G. S. Green Company, Inc., of New York City, is the designer.

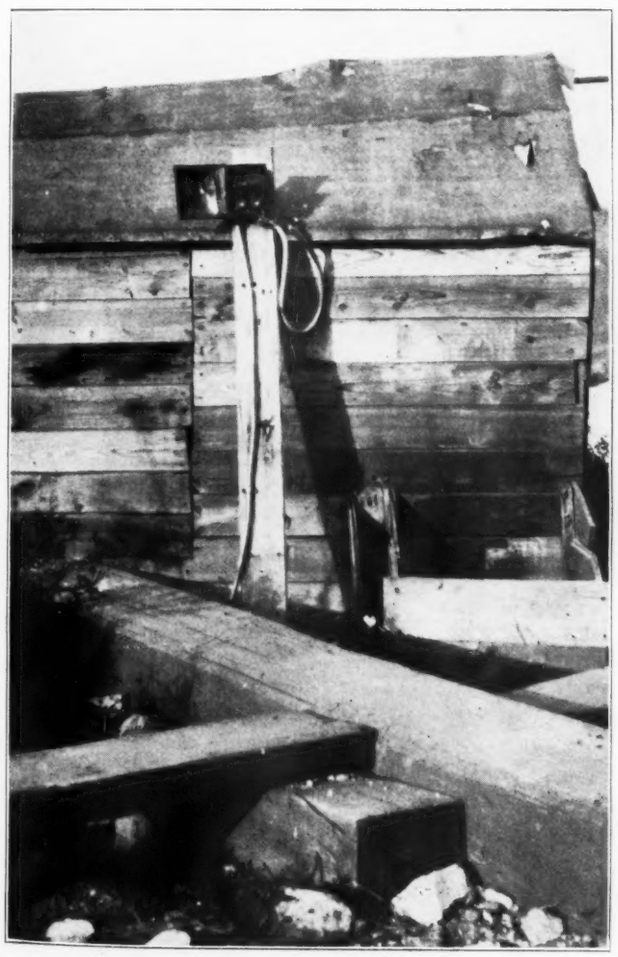
The quarry is located on a hill directly above the plant and is of the pit type. Drilling is done in benches with Ingersoll-Rand jackhammers and the blasting with 40 per cent DuPont dynamite. Stone is loaded by hand into a skip which is hoisted out by means of a Dobbie derrick, built and erected by the G. S. Green Company, Inc. This derrick is operated by a two-drum and swinger National hoist.



Derrick Handling Stone From Quarry to Plant

This derrick is so situated with respect to the plant that the boom may be swung around and the contents of the skip dumped directly into a bin at the top of the building, as shown in the illustrations.

The primary crusher, a No. 25 Kennedy gyratory, is fed from this bin. After passing through the crusher the stone is elevated to a Hum-mer screen. The commercial sizes pass through chutes to bins, the oversizes through other chutes to a Kennedy rod-mill or to a Sturtevant rotary crusher, depending upon the grade of material required. Each of these secondary crushing machines delivers the stone, through chutes, back to the elevator first mentioned, which returns it to the Hum-mer screen. As may be imagined from this brief description, the installation is very compact and efficient.



Switch for Setting Off Blasts

Operating the Hoist from Rim of Quarry

Under the storage bins there are Howes bagging spouts, shown in one of the pictures. These are on the shipping platform, served by a siding from the Harlem division of the New York Central Railroad. Bags are carried into the freight cars on hand trucks, supplied by the Lansing company of New York, and are weighed on Fairbanks platform scales. For bulk shipments there are chutes leading directly into gondola cars. Shipments are made to many of the New England states, New York, New Jersey, and elsewhere.

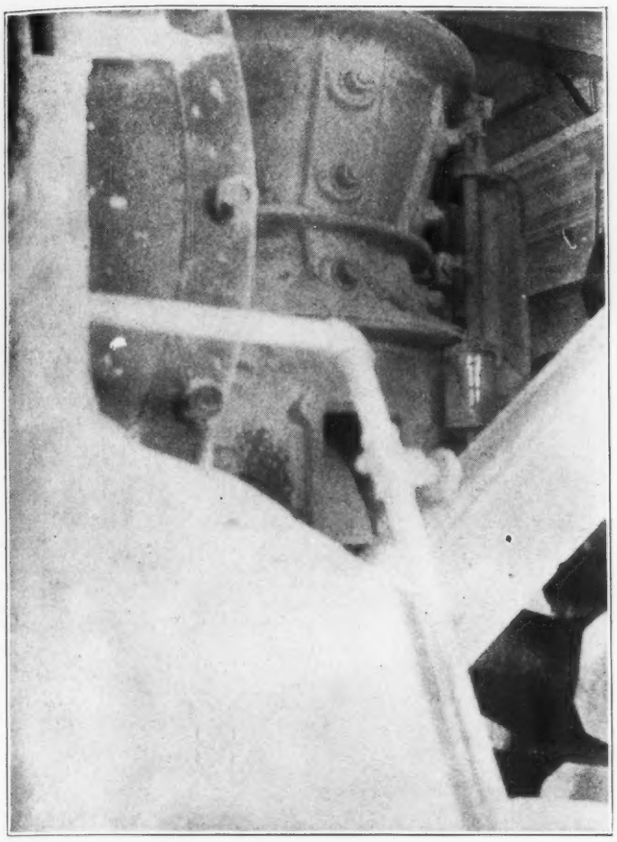
Loading Freight Cars

Bagging the Ground Marble

The plant is completely electrified. Thus the Ingersoll-Rand 9-inch by 8-inch air compressor is driven by a 40-h.p. General Electric induction motor, the hoist by another motor of similar size and make, the primary crusher and elevator by a 10-h.p. motor, the rotary crusher by one of 15-h.p., and the rod mill by a 50-h.p. motor. The last two are equipped with Morse chain drives, and the others with belt drives. Blue Streak belts are used. All of the wiring is enclosed in conduit and has been installed in a safe, workmanlike manner.

A most practical arrangement has been made

Ralph Scaperotta



Sturtevant Rotary Fine Crusher. The Motor And Drive Do Not Show

A Hum-mer Screen at Top of Plant

Loading Platform at Railroad Siding

for setting off blasts. This consists of ordinary armored, flexible house-wiring cable, commonly spoken of as B-X, connected to the machine at one end and to a small safety disconnect switch at the other end. The other side of the switch is permanently connected to the source of power and is located in a situation which not only is safe for setting off the charge but which at the same time commands a view of all approaches to the quarry as well as of part of the quarry itself. The arrangement is simple and makes for safety of operation by taking advantage of existing local conditions.

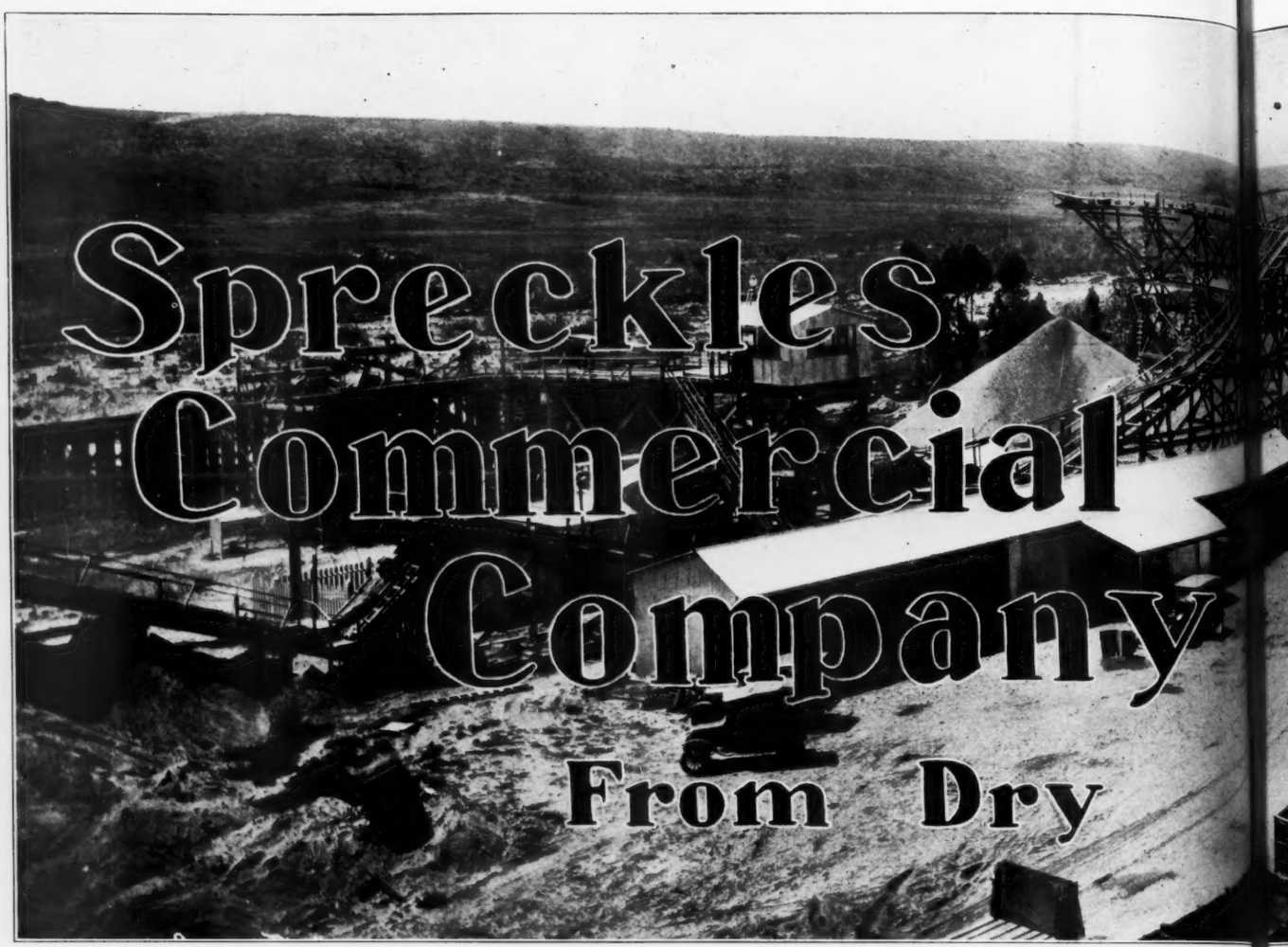
Streets in Remote Towns Paved With Precious Stones

A street almost literally paved with amethyst is reported to the Berlin geographical society by Professor Otto Quelle of Bonn university. He found it in Brazil, in the province of Bahia, where he visited German gem cutters' and polishers' colonies that have mined and handled 9,000 hundredweight of amethyst.

Whole streets, he said, are paved with the waste material that gives them a lovely violet sheen. Dr. Quelle said he knows of a place in Siberia where opals are so plentiful that the coarser grades are used as road material.

Bentonite as a Material for Pencil Leads

The clay for pencil leads must be absolutely free from grit and, to achieve this, long grinding or a costly refining by endosmotic means is necessary, says the U. S. Bureau of Mines. Purified bentonites would probably be admirably suitable for the manufacture of pencil leads, and some of the large pencil companies are understood to be using this material already for indelible leads and crayon work, thus saving considerable in grinding shrinkage resulting from the use of water with alkali types. The manufacturers of indelible leads, crayons, pastel colors, and the like, where grease or wax is used in the mix, would find bentonite of considerable value as a constituent of their products.

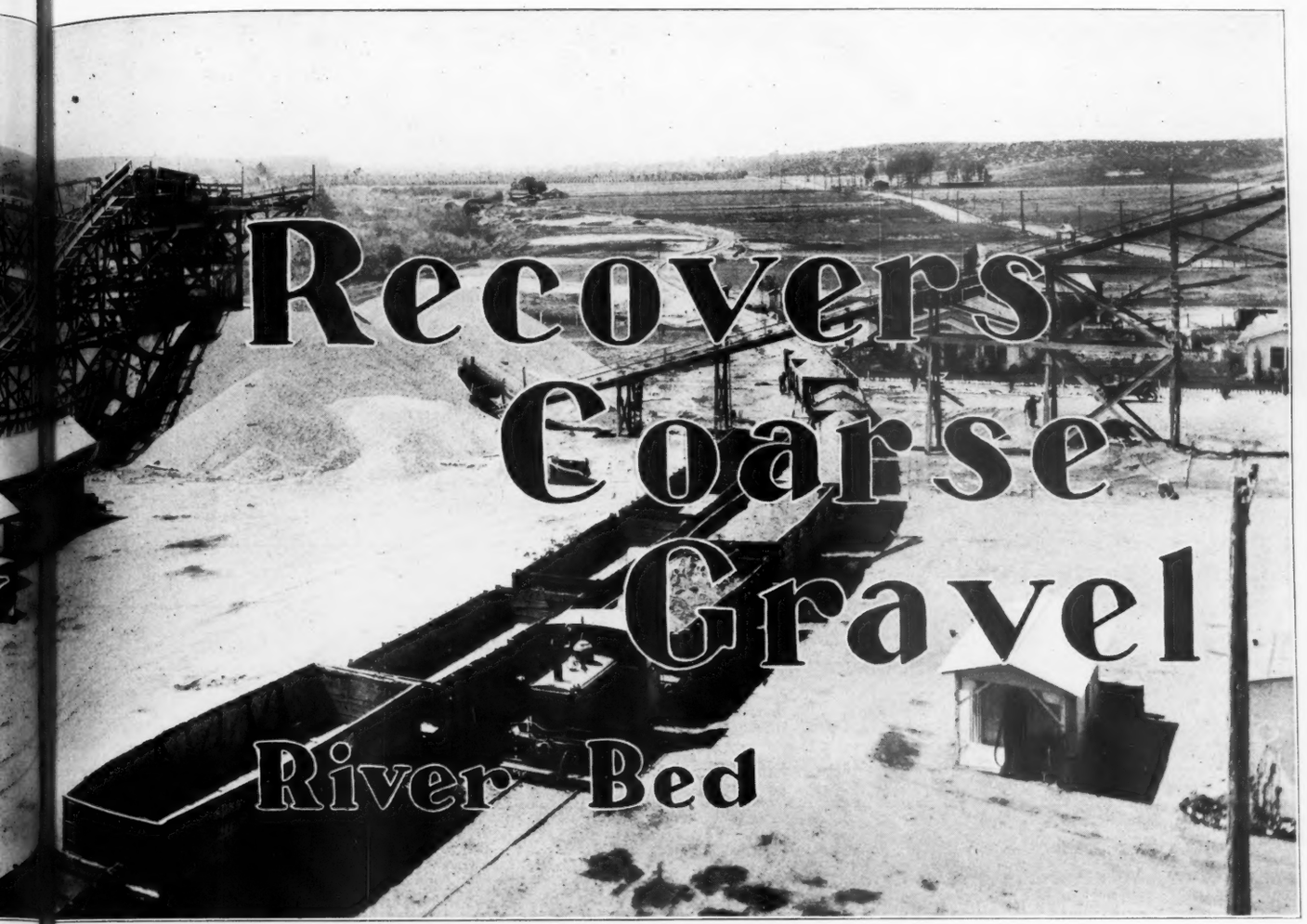


Plant Supplying Los Angeles With Building

ONE of California's famous dry rivers is the source of supply for industrial rock, sand and gravel. This river, or more correctly river-bed, is dry except during periodic heavy raining seasons. Even then, however, such a small quantity of water prevails that it does not seriously discommode operations in mining the natural materials. The material in the river-bed is ideal for commercial crushed rock, sand and gravel. The rocks do not exceed eighteen inches in size and decreasing in size down to gravel. The average rock handled will run about six to eight inches in size.

Gasoline Driven Crane

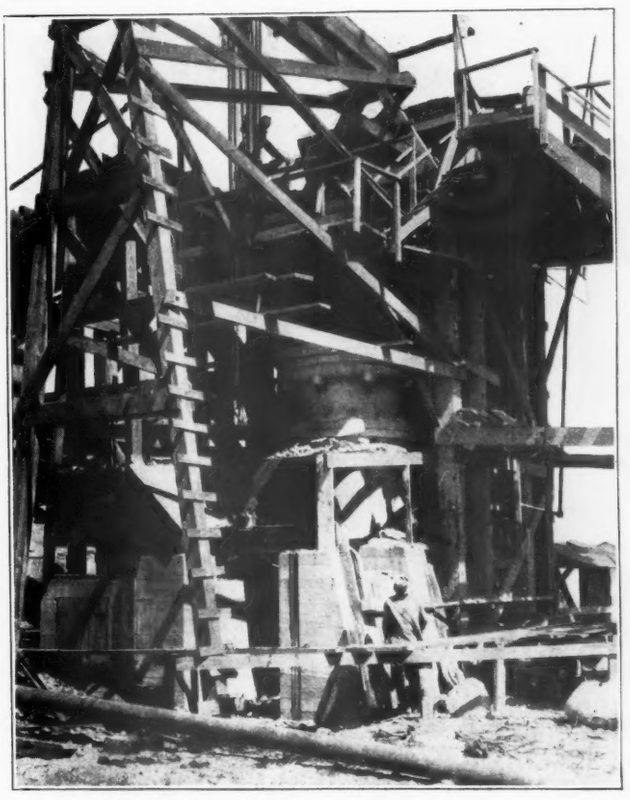
The material is picked up from the river-bed with a Northwest gasoline-driven crane, equipped with a 45-foot boom and a 1¼ cubic yard bucket. This crane has been efficient in handling the pit-run of material. The crane is equipped with a caterpillar tread to facilitate its movement to different parts of the operation. The material is dumped from the crane bucket into 5 cubic yard Continental side-dump cars, eight of these being in service in the pit. Approximately one-half mile of trackage has been laid in the pit to handle these operations. The Northwest crane is used at times to move the track to new locations. An 8-ton Plymouth gasoline locomotive is used to haul the cars from the pit to the grinding and screening plant. The cars are hauled to the foot of an incline track by this locomotive, at which point they are hooked onto a cable running to a model 200, 100-h.p. double-drum, electrically-driven hoist manipulated by the Western Enterprise Engine Company. The hoist pulls the cars up the incline until they are in position over the crusher, and they are then dumped.



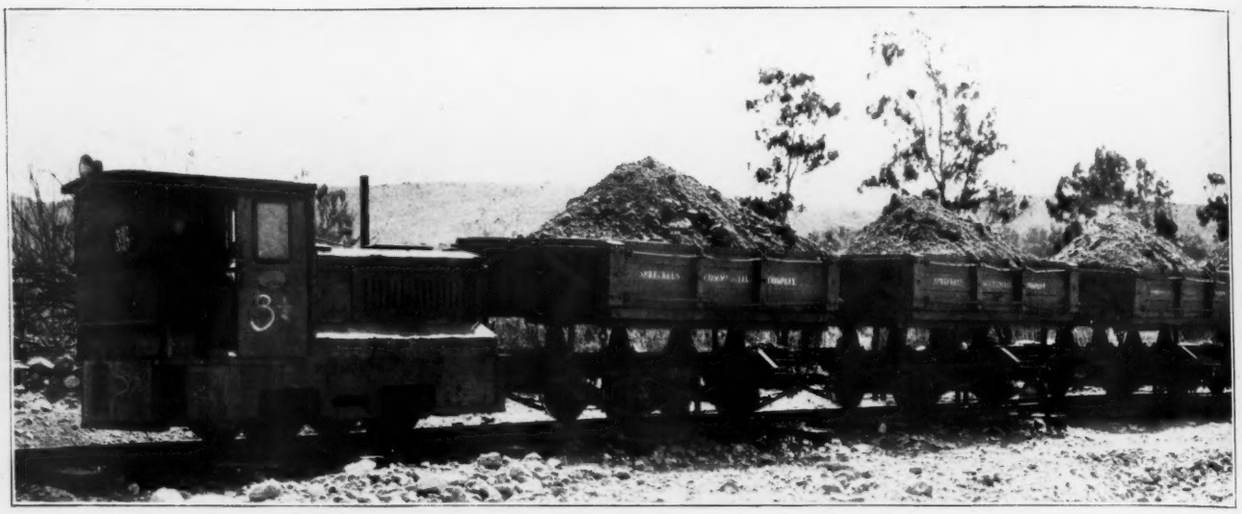
Materials, Described by Gordon F. Sondraker

The material falls from the cars direct to a 20-inch Allis-Chalmers Superior gyratory crusher which reduces the material to six inches and finer. This gyratory product is then delivered by a belt conveyor to a rotary scalping screen. This screen allows the material 2 inches and under in size to fall onto another belt which conveys it to the washer. The material 2 inches to 4 inches in size is dropped by gravity to a 3-foot Symons horizontal cone crusher which further reduces the material to 1-inch and finer. It is then conveyed by a belt to the washing and separating screens. The material that leaves the scalping screen over 4 inches in size falls into a 14-in. by 38.-in. roller bearing jaw crusher manufactured by the Alloy Steel Company. After being crushed, the material drops to a 20-in. by 30-ft. cross conveyor belt which, in turn, drops it to an incline belt conveyor 20 inches wide on 110-foot centers. This belt conveyor drops the material into the scalping screen again whence it follows its former routing.

A Bodinson eccentric feeder takes the material from the belt conveyors after it is properly crushed to size and delivers it to the 4-ft. by 14-ft. Standard rotary washing and separating screen which



Gyratory Crusher



Eight-Ton Locomotive Hauling Dump Cars from Pit to Plant

washes the material thoroughly and separates the sand from the pea gravel and larger sizes. The sand from the washer goes to a 20-in. by 60-ft. incline belt conveyor which delivers it to another incline belt conveyor measuring 20 ins. by 125 ft. This second conveyor elevates the material some 50 feet and delivers it to a cross belt conveyor which spreads the sand over the stock-pile.

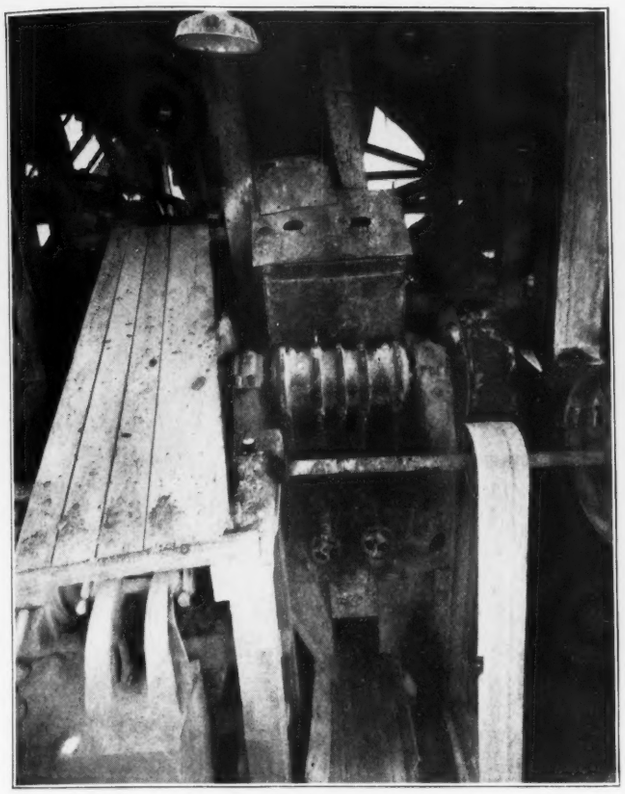
The sand is drawn from this stock-pile by an underground incline belt conveyor. This belt conveyor is 16 in. by 250 ft. in size. It elevates the material over the loading tracks to a bunker for truck shipments by rail, the belt is tipped as it passes over the railroad cars beneath, the material falling directly into the cars. The cars are spotted under the belt by a Plymouth locomotive, later. This is an exceptionally unique and economical method of loading material into the cars and is well worthy of the attention of every producer of rock, sand or gravel.

Crushed Rock and Gravel Is Graded

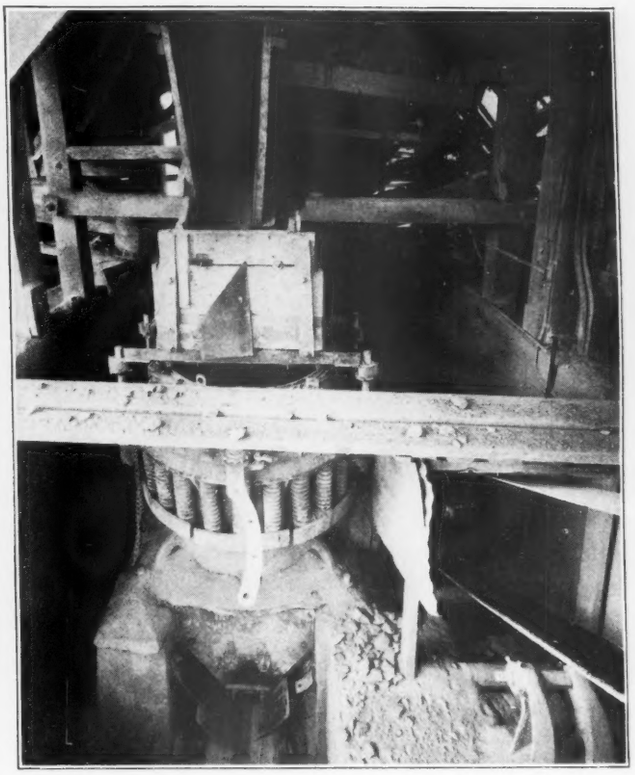
As the rock and gravel that has been freed of sand leaves the washer, it falls to a 24-inch by 125-ft. incline conveyor belt which elevates and conveys the material to the rock-separation screen which was manufactured by the Standard Steel and Boiler Works. This screen classifies the material into three sizes, namely, ½-inch, 1-inch, and 2-inch. The classified materials fall into chutes or onto belt conveyors which deliver them to the different stock piles.

The materials are drawn from the stock-piles by means of an incline belt conveyor which runs underneath the stock-piles and starts its incline as it

Twenty-five-Ton Locomotive Hauling Trains Sixteen Miles from Plant to Main Line of Railway



Jaw Crusher



Horizontal Cone Crusher

emerges from beneath them. Material may be drawn from any of the desired stock piles by this conveyor which measures 16 in. by 250 ft. This belt conveyor delivers the crushed and classified rock to bunkers having a capacity of 400 tons. These bunkers are used solely for loading trucks. In the event that it is necessary to load cars, the belt is tipped over the cars in a manner similar to that in loading sand. A close inspection of the title piece photograph will find the belt tipped over a chute leading to the cars.

Plymouth Gasoline Locomotive Used for Hauling

A 25-ton Plymouth gasoline locomotive is used to haul the cars over the sixteen miles of track that separate the plant from the main-line railroad. The results achieved by the 8-ton Plymouth in use at the gravel pit were so satisfactory that this 25-ton locomotive was purchased recently through Collins-Kay Company of Los Angeles to speed up deliveries of material. An idea of the work performed by this new locomotive may be gained from the photograph showing it hauling eight standard gauge gondola cars.

The Otay plant of the Spreckles Commercial Company is admirably located for more reasons than one. Just over the hills discernible in the background of the large picture is the United States-Mexico border-line and the famous Tia Juana in Mexico. The writer was informed by Lee Wagers, superintendent and Lloyd Carpenter, foreman, to both of whom he is indebted for courtesies while inspecting the plant, that the fact of Tia Juana's nearness has reduced their labor turnover.

General business has progressed so rapidly in the territory served by the Spreckles Company that the plant has been wired for night operation. At present the plant has a capacity of 100 tons of crushed rock, sand and gravel per hour.

Additional Speakers Broadcasting For the Safety Movement

In the broadcasting series of the National Safety Council, the following speakers are to be heard during June over the nation-wide networks. These radio addresses are on Saturdays at 7:15 central standard time.

June 8—Grover A. Whalen, New York commission of police: Enforcement as an Aid to Safety.

June 15—Alfred H. Swayne, vice-president, General Motors: The Automobile and Safety.

June 22—Harry F. Guggenheim: Safety in the Air.

June 29—Joseph E. Sheedy, vice-president, United States Lines: Safety on the High Seas.

The third annual Central States Safety Congress and Exhibit was held April 30 to May 1 at the Hotel President, Kansas City, Missouri. It was sponsored by the National Safety Council and sixteen affiliating councils and associations.

Practically all of the Canadian production of magnesite comes from a small area in the townships of Grenville and Harrington, province of Quebec.

Memphis Chosen by National Sand and Gravel Association for 1930 Convention

Board of Directors Discusses Various Timely Phases of the Industry

THE Board of Directors of the National Sand and Gravel Association held its spring meeting May 16 and 17 in the King Edward Hotel, Toronto, Ontario, Canada. President R. C. Fletcher of the Flint Crushed Gravel Company, Des Moines, Iowa, presided. Others in attendance were: Secretary H. S. Davison, of J. K. Davison and Brothers, Pittsburgh, Pa.; Executive Secretary V. P. Ahearn, Washington, D. C.; Stanton Walker, director of engineering and research; H. M. Davidson, Harnischfeger Corporation, Milwaukee, Wis.; F. W. Peck, Muncie Sand Company, Kansas City, Mo.; C. Patterson, Ohio River Sand Company, Parkersburg, W. Va.; F. L. Ward and Col. C. F. von dem Busche of Ward Sand and Gravel Company, Detroit, Mich.; J. C. Buckbee, Northern Gravel Company, Chicago, Ill.; Alexander Foster, Jr., Charles Warner and Company, Philadelphia, Pa.; Hugh Haddow, Jr., Menantico Sand and Gravel Company, Millville, N. J.; V. O. Johnston, Lincoln Sand and Gravel Company, Lincoln, Ill.; D. D. Guilfoyle, Sauerman Brothers, Chicago, Ill.; Stephan Stepanian, Arrow Sand and Gravel Company, Columbus, O.; H. A. Stelley, Buffalo Gravel Corporation, Buffalo, N. Y.; N. C. Rockwood, *Rock Products*, Chicago, Ill.; and L. M. Weiss, PIT AND QUARRY, Chicago, Ill.

One session of the meeting was devoted to an illustrated lecture by Stanton Walker upon the accomplishments of the engineering and research division of the association.

In the evening of the opening day, the directors and wives were guests of the Canada Sand and Gravel Company, Toronto, at a dinner in the King Edward Hotel.

The second day was devoted to the discussion of numerous topics of timely interest to the association, such as the desirability of the industry conducting a trade-practice conference for the purpose of eliminating unethical and unfair practices; the cost of cleaning and repairing railroad cars; unfair sales policies of machinery manufacturers that contribute to over-production in several sections of the country; standard depreciation scale for the industry; compensation insurance; the *National Sand and Gravel Bulletin;* results of tests conducted by the association's own research division and by the United States Bureau of Public Roads; and the simplification of commercial sizes of sand and gravel.

Besides those listed above, the following were in attendance at this session: R. W. Eberle, Buffalo Gravel Corporation, Buffalo, N. Y.; G. W. Renwick, Chicago Gravel Company, Chicago, Ill.; George Vang, Iron City Sand Company, Pittsburgh, Pa.; and Mike Garber, Thew Shovel Company, Lorain, O.

Executive Secretary V. P. Ahearn presented a lengthy report which eliminated valuable discussions. Excerpts from this report are as follows:

Desirability of a Trade Practice Conference

"The trade-practice conference affords a means through which representatives of an industry voluntarily assemble, either at their own instance or that of the Federal Trade Commission, but under auspices of the latter, for the purpose of considering any unfair practices in their industry, and collectively agree upon and provide for their abandonment in cooperation with the commission. The procedure deals with an industry as a unit. It is concerned solely with practices and methods, not with individual offenders. It regards the industry as occupying a position comparable to that of 'friend of the court' and not as that of the accused. It wipes out on a given date all unfair methods condemned at the conference and thus places all competitors on an equally fair competitive basis. It performs the same function as a formal complaint without bringing charges, prosecuting trials, or employing any compulsory process, but multiplies results by as many times as there are members of the industry, who formerly practiced the methods condemned and voluntarily abandoned.

"When a trade-practice conference is applied for, a preliminary inquiry is made by the Division of Trade-Practice Conferences, the result of which serves as a basis for determining whether the practices or methods used are unfair to competitors or against the public interest, and whether the interest of the public is best served by calling a trade-practice conference for the industry in question. Such a conference may be called on the application of a representative group in an industry, or by the commission on its own initiative. In either case the consensus of opinion of the entire industry is sought, and if a desire for such a conference is shown on the part of a sufficiently representative number, the entire industry is invited to participate. A commissioner of the Federal Trade Commission presides. Those present are encouraged to organize by electing their own chairman and their own secretary. The representatives of the commission then withdraw.

"After the industry has frankly examined and freely discussed any practice or method, the elimination of which would be beneficial and fair to all in the industry and to the public, resolutions are framed which, in the judgment of its representatives, are workable and enforceable. The presiding commissioner is then notified, and the resolutions are separately voted on and further discussed, if desired. The proceedings of the conference are then reported to the commission through the Division of Trade-Practice Conferences, and, after consideration, such resolutions as are accepted and approved by the commission become the rules of business conduct for that industry on the subjects covered. The remaining resolutions, if any, are taken as advisory, or, should any be considered as against the public interest, they would be rejected.

"The beneficial results to business of elimination of unfair trade practices may be imagined if the time and money spent by parties in attempting to secure unfair advantages against one another were devoted to cooperative thought and effort to improve trade relations, each element in industry recognizing that it can best further its own prosperity by helping to build the prosperity of the business with which it deals.

"Certain objections are usually offered to this form of cooperative effort. It is suggested, in the first place, that this is equivalent to an invitation for Government to meddle in private business. Instead of bringing the Government into private business, the effect of a trade practice conference is to keep the Government out of business. No additional authority is conferred upon the Federal Trade Commission by a trade practice conference. Anything that the Commission can do after a conference it could do equally well and with the same effect if the conference does not take place. The jurisdiction of the commission extends to preventing unfair methods of competition, and this it derives from the organic act."

The board expressed its approval of a trade practice conference and appointed, as its committee in this activity, Hugh Haddow, Jr., chairman, H. S. Davison, U. O. Johnston, and John Prince. The following extracts also are from Mr. Ahearn's report.

Cost of Cleaning and Repairing Railroad Cars

"It would seem that the sand and gravel industry is spending approximately $1,500,000 annually in conditioning cars for loading, an expense which it should not be called upon to assume. Unfortunately, there is no remedy in the law for reimbursement of the producers by the railroads.

"It was considered advisable to enlist the cooperation of the National Crushed Stone Association and the National Slag Association in carrying our case to the American Railway Association. Such cooperation was secured and each of the two industries in question has made suitable investigations. The joint reports will be submitted to the railroad authorities at a conference in Washington on June 5, at which time it is expected that measures will be taken for bringing some measure of relief to the producers of aggregates in the matter of car expense."

Unfair Sales Policies Of Machinery Manufacturers

"At the last meeting of the executive committee, consideration was given to complaints received from several members to the effect that many manufacturers and distributors of machinery and equipment used in the sand and gravel industry were selling their products under credit terms which include small, if any, down payments, accompanied by an allowance for the payment of balances extending over periods of many months.

"The executive staff of the association was requested to make suitable investigations to determine the extent of the practices referred to, in order that action might be taken by the association looking toward the elimination of any evils. On March 21 a circular letter was addressed to the membership on the matter, and with the letter was enclosed a questionnaire as a means of suggesting the kind of information which the association needed. The responses to this letter indicated that a condition exists which should be corrected, and while this seems to be particularly true with reference to credit policies of motor truck manufacturers, it was reported in several cases that some manufacturers of other types of equipment are equally as responsible for bringing about overproduction in the sand and gravel industry in several localities."

After a discussion of these reported irregularities of manufacturers in giving favorable terms to newly formed sand and gravel producers, the matter was referred to the manufacturers' division for future consideration.

Standard Depreciation Scale For Sand and Gravel Industry

"The depreciation committee of the association," said Mr. Ahearn, "during the course of the last two years, has made an exhaustive study of depreciation experiences in the sand and gravel industry at the request of the United States Bureau of Internal Revenue. It was considered necessary at the outset of the investigation to divide the sand and gravel industry into four different kinds of operations: first, marine operations; second, pumping operations; third, bank operations; and, fourth, rock products operations in southern Calfornia. Sub-committees, composed of representative producers in each type of operations, were appointed

(*Continued on Page 77*)

Slag Bridges and Other Wear-Resisting Structures

THE National Slag Association of Cleveland, Ohio, has published Symposium No. 13 of a series describing the characteristics and uses of blast furnace slag. This symposium, entitled "Slag Bridges and Other Water-Resisting Structures," contains abstracts from various magazines and papers and statements from authorities on this subject.

A large part of the symposium is devoted to the description of concrete highway and railroad bridges in all parts of the United States and Europe in which slag was used as aggregate. Dr. C. E. Bardsley, National Slag Association Fellow in Highway Engineering at the University of Michigan, in his thesis, "Utilization of Blast Furnace Slag," gives a summary of the extent of this practice. He says: "Slag concrete has been used in the construction of over 75 highway and railway bridges in the United States, ranging in length from 18 to 3,187 feet; in width from 18 to 72 feet; in height from 14 to 195 feet; in number of spans from 1 to 44; and in tonnage of slag used from a few tons up to 30,000 tons in a bridge."

Colonel Rabut, a French civil engineer, in an address before the Paris Academie des Sciences, spoke of experimental researches which he has made since 1909 with slag as an aggregate in concrete. From these researches he came to the conclusion that other things being equal, slag concrete is generally stronger than gravel concrete; that its weight is from 30 to 40 per cent less than that of gravel concrete; and that the ratio of strength to weight attains maximum value when the proportion of sand is from 1/4 to 1/5 that of the slag used as aggregate. As a practical application of his experimental results, Colonel Rabut has built two important structures of slag concrete. These are the bridge carrying the station of Asnieres, on the outskirts of Paris, and the Lestonnat Jetty, in the Port of Bordeaux.

Akron, Ohio, holds the distinction of having two slag concrete bridges, one of which is the highest slag concrete bridge in existence and the other the largest slag concrete bridge in tons of slag used. The former, known as the North Howard Street bridge, is 195 feet high and 792 feet long, and was completed in 1913. The latter, known as the North Hill viaduct, is a 29-arch structure 130 feet high and 2,280 feet long. Thirty thousand tons of slag were used in its construction. This viaduct was described in the February, 1923, issue of *Scientific American* in an article entitled "Completion of Notable Concrete Viaduct."

Slag has also been used to a large extent as aggregate in the concrete piers and abutments supporting railroad bridges. Philip Aylett, Member, American Society of Civil Engineers, in an article, "Track Depression of Seaboard Air Line Railway at Birmingham, Alabama," published in *Engineering News Record*, October 1, 1908, describes a bridge in which slag aggregate was used after a series of exhaustive tests. Numerous other instances are cited where slag was used in railroad bridge pier construction with satisfactory results.

Several slag concrete sea piers have been built in England which have successfully resisted the destructive action of the waves. Two of these are described by Dr. J. E. Stead, Metallurgist, Middlesbrough, England, in an article, "Blast Furnace Slag in Concrete and Reinforced Concrete," which appeared originally in *London* (England) *Engineering* and later in *Iron Age*, December 18, 1919. Huge slag concrete blocks placed around one of these piers to break the force of the waves were examined after periods of from 6 to 17 years and showed no signs of disintegration.

Slag concrete culverts, sewers, and water tunnels are also described. The earliest definite date at which slag concrete was used in culverts is that given by H. R. McMahon of the Reinforced Concrete Pipe Company, Jackson, Michigan. The booklet "Slag," published by the Cleveland Furnace Company in 1907 is quoted. Many instances are also cited in which slag concrete was used in sewer and water tunnel construction. A. T. Goldbeck of the Bureau of Surveys, Philadelphia, Pennsylvania, in a paper, "Reinforced Concrete Sewer Pipe," presented at the American Concrete Institute in 1915, says: "In the tests of circular and egg-shaped reinforced concrete sewer pipe, the few tests of slag concrete pipe indicated that concrete containing broken slag aggregate is more impermeable than that made with broken stone, and also slightly exceeds the latter in strength and stiffness."

The impermeable nature of slag concrete has led to its use in a number of tanks and reservoirs throughout the country and in dams and swimming pools. Many such cases are described together with statements by various authorities on the results obtained. Slag concrete canals and docks are also described.

The permeability of slag concrete is thoroughly discussed in the symposium. The results of numerous tests are given and instances cited to demonstrate the water-tightness of slag concrete. Extracts from articles and papers by authorities on the subject are included.

Marianna Lime Products Company Has Rapid Growth In Less Than Three Years of Operation

Florida Lime Rock Used Extensively as Road Ballast

THE Marianna Lime Products Company of Marianna, Florida, although a comparative newcomer in the lime rock industry, has made rapid strides since its first plant went into operation about two years ago. The company now operates five plants, one in Alabama, one in Arkansas and three in Florida. The Florida and Alabama plants, which are only a comparatively few miles apart, together produce a large proportion of the total output of lime rock in that section.

The three Florida plants, which are known as plants Nos. 2, 3 and 4, are all located on the same 15,000 acre property, 6 miles northwest of Marianna on the Bee-Line Highway between Montgomery, Alabama and Marianna. These plants are all working in the same deposit and operate by practically the same methods. The overburden of sandy clay averages about 2½ feet in depth and the deposit averages about 50 feet. A Bucyrus 30B convertible Diesel dragline operating a Page 1-yd. bucket does all of the stripping for these three plants.

The stone in the Marianna deposits is a soft limestone of high calcium content. Very little blasting is necessary. Hand drills are used for drilling blast holes and Peerless 30 per cent dynamite for blasting. DuPont electric caps and Ensign Bickford Clover Brand safety fuse are used

Superintendent J. L. Godwin

View of Plant No. 4 with Car Being Loaded

Car Dumping at Plant No. 4

Dragline Stripping Clay Pocket at Plant No. 3

to set off the blasts. What little secondary blasting is necessary is done by the same methods.

Florida Plant No. 4

Plant No. 4 went into operation about 18 months ago and has been operating steadily since that time. A ⅞-yd. Erie steam shovel loads the lime rock into 2½-yd. steel end dump cars which were made by the Kilby Car and Foundry Company. The cars are hauled up a two-track incline to the plant by an Ocala Iron Works 2-drum hoist driven by a Fairbanks-Morse 125-hp. electric motor through an American Steel Chain Company silent chain drive. Hercules flat strand cable is used.

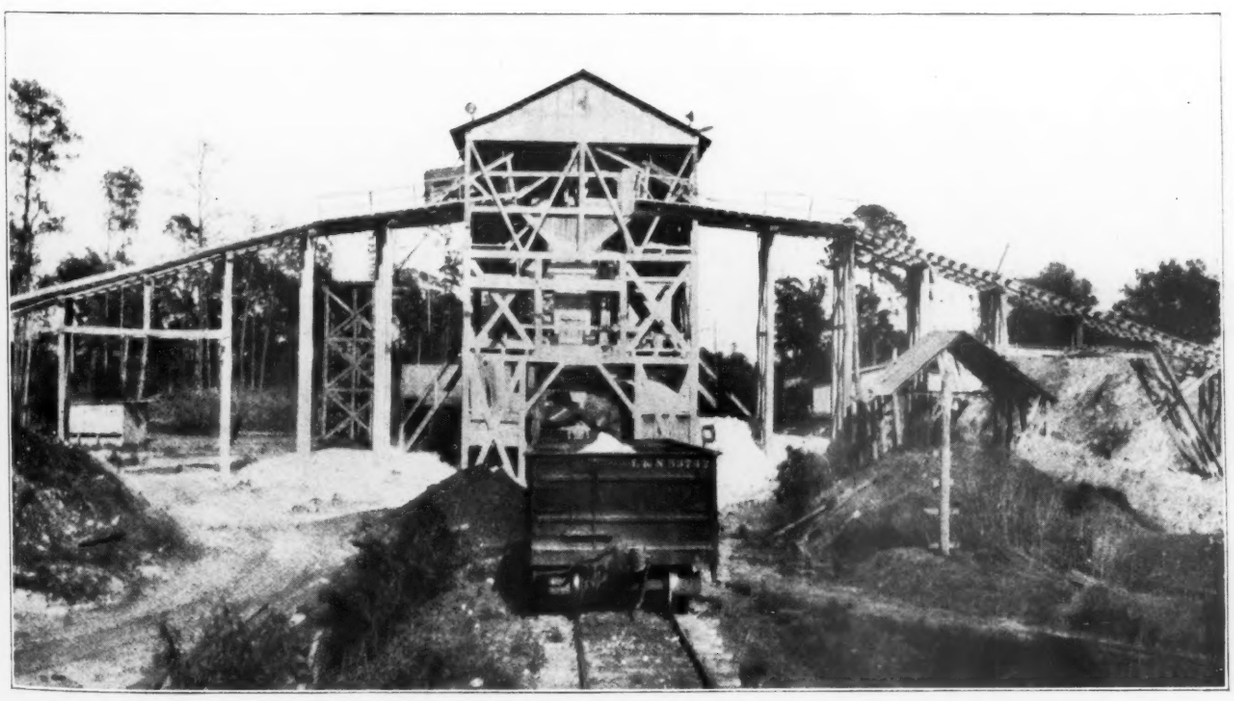
No. 3 Plant from East. Pump-house and Water Tank in Foreground

View from Quarry Toward Plant No. 3

The cars dump into a steel-lined wooden hopper at the top of the plant, which feeds a 22- by 60-in. Ocala knob roll crusher. This crusher discharges onto a bar grizzly with 3-in. spacing, the rejects going to an Ocala Iron Works 18- by 36-in. knobby roll crusher for further reduction. The material from the secondary crusher and that passing through the grizzly feeds onto a belt conveyor which loads into cars on a siding next to the plant. This conveyor has Dodge Timken rollers and United States Rubber Company belting. The crushers and belt conveyor are driven from the same motor which operates the hoist, by an arrangement of belts and pulleys. This plant has a capacity of about 100 tons per hour.

Florida Plant No. 3

Plant No. 3 went into operation about 2 years



No. 3 Plant from West Showing Two Inclines

Secondary Blasting in No. 3 Quarry

ago. An Erie ⅞-yd. steam shovel loads into 2½-yd. Kilby end dump cars on a double track in the quarry. They are hauled up an incline to the plant by 2 drums of an Ocala Iron Works 4-drum hoist using Hercules cable. There is another incline to a quarry on the opposite side of the plant which can be used when demand requires. The other two drums on the hoist operate the cars from this quarry.

The crushing operations are very similar to those at Plant No. 4. The cars discharge into a steel-lined hopper which feeds a 22- by 54-in. Ocala Iron Works primary roll crusher. The product goes to a 3-in. bar grizzly, the fines discharging directly into cars on a siding running under the plant and the rejects into a 22- by 42-in. roll crusher and into the same cars. This plant has the highest capacity of any of the company's operations, having shipped out over 1,000 cars of road stone in a single month.

Florida Plant No. 2

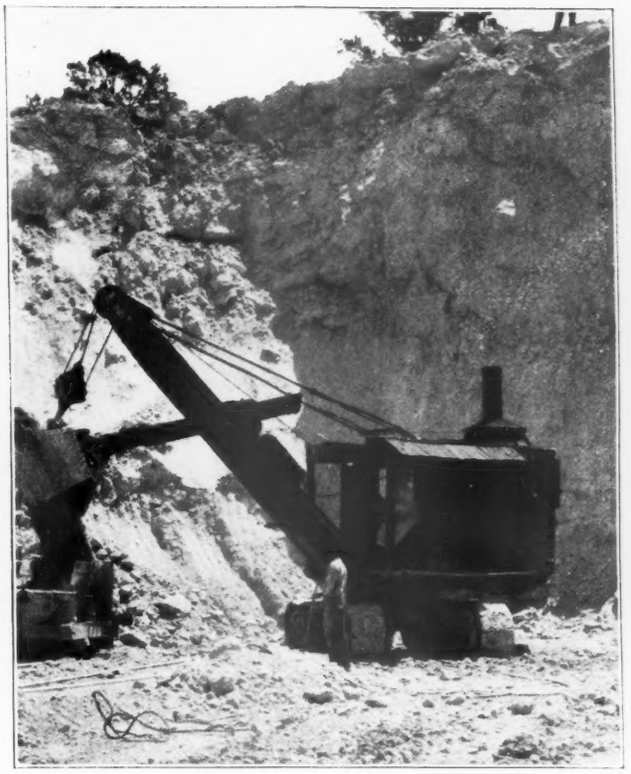
Plant No. 2 first went into operation less than a

No. 2 Plant from Southeast

year ago for the production of concrete rock. There was comparatively little demand for this product, however, and the plant is now being converted to produce agricultural limestone. There is no quarry at this plant. The material will be brought from plants No. 3 and 4 in 12-yd. Western side dump cars.

The cars will run onto a fill adjoining the plant and will dump into a hopper alongside the track. The hopper discharges through a gate onto an 18-in. belt conveyor on 180-ft. centers in a tunnel underneath. This conveyor has Webster rollers and Diamond Rubber Company belting. It discharges into a Gruendler patent pulverizer which is driven by a Fairbanks-Morse 75-hp. electric motor. The pulverizer reduces to the required size and discharges onto an 18-in. by 25-ft. centers Webster belt conveyor discharging into cars on a siding alongside the plant. This plant will have a capacity of about 150 tons per day.

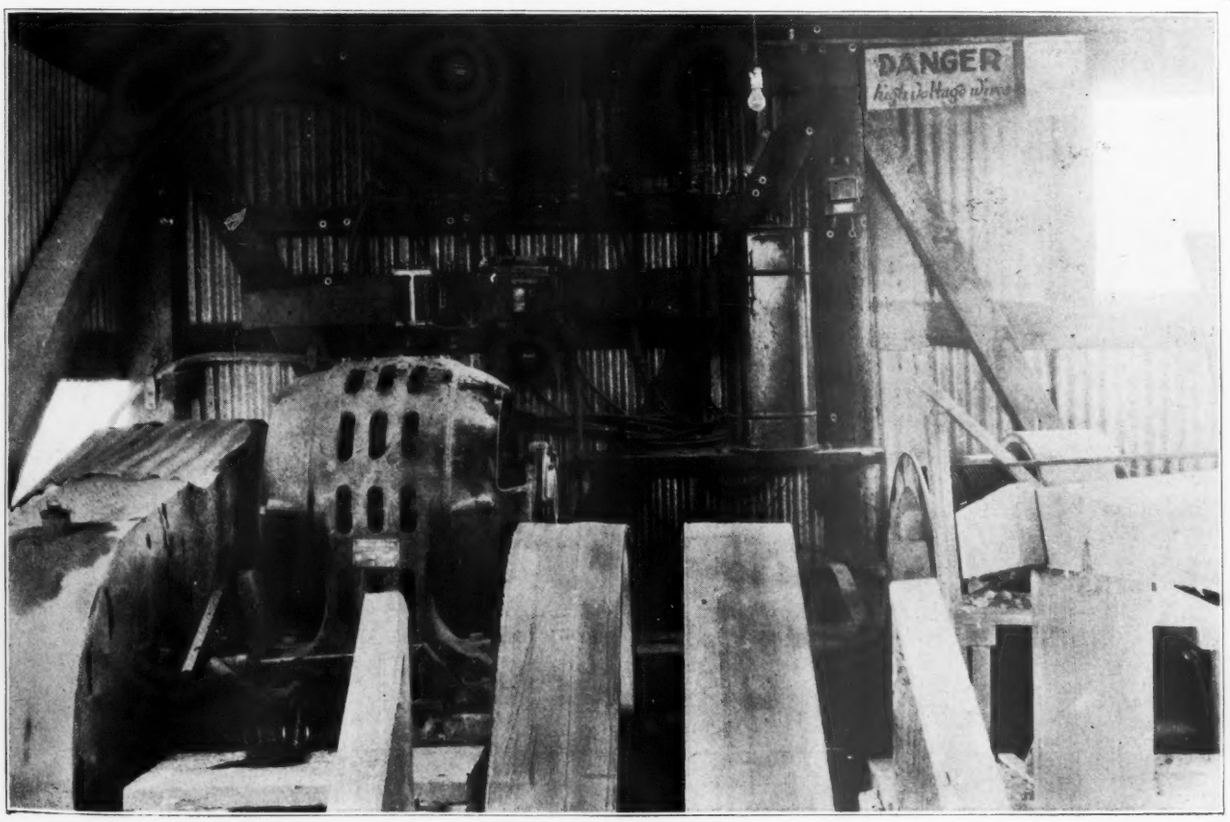
Switching for all three of the Marianna plants is done by a Baldwin 65-ton steam locomotive. A 2½-mi. switch track connects these plants with the Louisville and Nashville railroad branch between Pensacola and River Junction. Water for the steam shovels and other uses comes from a well at Plant No. 3, where a deep well pump feeds to a 10,000-gal. wooden water tank. Water is piped to plants No. 2 and 4 from this tank. A well-equipped blacksmith shop and a commissary for the employes are also maintained here.



Steam Shovel in No. 3 Quarry

The Alabama Plant

The Lima plant is located on a large property 6 miles northeast of Florala, Alabama, which is only a few miles north of the Florida line and about 65 miles west of Marianna. The deposit which is now



Hoist, Motor and Silent Chain Drive at Plant No. 3

Dragline Stripping Overburden at Florala Plant

being opened alone is estimated to contain over 400,000 tons of lime rock running about 99 per cent calcium content. The deposit is 45 feet deep and has about 2 feet of overburden, which is being removed by a Thew convertible Diesel driven dragline with a Page 1-yd. bucket.

The plant is very similar to plant No. 3 at Marianna, having a double incline from the quarry and the same type cars and hoist. The primary roll crusher is 20- by 42-in. and the secondary crusher a McLanahan and Stone 18- by 36-in. roll. The conveyor which feeds from the crushers into cars is a Dodge Timken 24-in. by 50-ft. centers with United States belting. All of the machinery is driven by a Fairbanks-Morse 100-h.p. semi-Diesel engine. This plant will have a capacity of about 100 t.p.h. Shipments will be made over the Central of Georgia railroad, which is connected with the plant by a 1½-mile switch tract.

A new lime rock plant is now under construction at Cottondale, about 10 miles west of Marianna, and will be in operation in a short time. A one-mile spur track is being built to the main line of the Atlanta and St. Andrews Bay Railroad. Thousands of acres of land containing high-grade lime rock deposits have been purchased recently and will be developed. Most of this property is in the vicinity of Marianna, bordering on the city limits.

The product of all of the plants ranges in size from 3 inches down to dust. Most of it is used for road-base for state and county highways in a radius of about 150 miles from the plants. This

(*Continued on Page* 77)

View of Florala Plant

Western Cement Company Shows Large Expansion

Growth of Monolith Company Is Sketched

EACH decade witnesses the rise to prominence of a new group of non-metallic operators or manufacturers, creating substantial dividend-paying enterprises that are a credit to western America. An outstanding example is the rapid rise in the industrial world of the Monolith Portland Cement Company of Los Angeles, California. Although barely nine years old, the Monolith company today takes its place among the largest producers of cement in western America, with assets in excess of $10,000,000.

Incorporated under the laws of Nevada in June, 1920, the Monolith Portland Cement Company started in business in a small way at Monolith, Kern county, California. Since that time the company has added to its holdings and has developed its facilities for manufacturing cement until today the annual production from the Monolith plant alone exceeds 1,600,000 barrels. Developed and proved raw materials at the Kern county properties are conservatively estimated as sufficient to supply the plant for many years to come.

This company embarked, about three years ago, on an expansion program which has set a high mark for development in the cement industry of the West. The initial results of this expansion program are marked by the proposed formal opening, on June 25th, of a new plant at Laramie, Wyoming, operating as a subsidiary under the name of the Monolith Midwest Company, with the controlling interests invested in the parent company.

Carroll A. Low, Vice-President and General Manager, Monolith Portland Cement Company, And Monolith Midwest Portland Cement Company

J. J. Calkins, Secretary-Treasurer, Monolith Portland Cement Company and Monolith Midwest Portland Cement Company

The great Laramie lime deposit was first prospected twenty-five years ago by Wilford S. Trueblood, present production manager for the Monolith companies. This deposit, reported by experts to be a very high-grade material for cement manufacturing, lies ten miles from Laramie, close to the main line of the Union Pacific railroad, and contains sufficient tonnage to assure capacity operation of the Monolith Midwest Company for well over a hundred years.

The Western Public Service Company, under the management of Stone and Webster, increased the capacity of its plant in Laramie, at an expenditure of $625,000, primarily for the purpose of supplying electric power to the Monolith Midwest Company's plant. When operating at ultimate capacity, the new Laramie plant will exceed that of the company's present plant in Kern county.

Working forces of several hundred men are employed in the two plants, working conditions and wages being such that an exceptionally low labor turnover is experienced.

It is highly significant that the Monolith organization, from its inception, recognized the importance of customer ownership, and at the very outset adopted this as a settled policy for future financing. Today more than six thousand stock-

holders form the backbone of the financial structure of the Monolith Portland Cement Company of California and the Monolith Portland Midwest Company of Wyoming.

In line with its policy of acquainting the public with the various uses of cement, from an aesthetic as well as a strictly utilitarian standpoint, the Monolith company, some years ago, commissioned the noted architect, Richard S. Requa, of San Diego, California, to visit Spain and other Mediterranean countries to study and picturize various types of architecture in residences, public buildings, bridges, and other works in which cement is used as a structural material. The Spanish and Mediterranean types of structure are particularly suitable to blend harmoniously with the natural landscape of southern California. Hundreds of these pictures, with explanatory matter, were incorporated by the Monolith company into an artistic volume, copies of which have been placed in libraries and universities throughout the West and in scores of offices of architects and builders, up and down the Pacific Coast. This work has had a tremendous influence in improving the architecture of residences and other buildings from a picturesque standpoint, particularly in southern California. Mr. Requa recently returned from a second visit to the Mediterranean countries on a similar commission. Ten thousand copies of the company's house organ, Monolith Mixer, are distributed by the firm each month, further spreading the company's educational message to the public.

At the head of the Monolith Portland Cement Company and its subsidiaries are the following keen-visioned business men: Coy Burnett, president; Alfred F. Smith, chairman of the executive committee; Carroll Low, vice-president and general manager; J. J. Calkins, secretary and treasurer; H. C. Gardner, director of sales in the securities department; Wilford S. Trueblood, manager of production; and F. R. Brownell, sales manager.

Mr. Burnett at 42 is one of the industrial leaders of the West. Following his graduation from the University of Nebraska in 1909, Mr. Burnett formed a law partnership with his brother, W. B. Burnett, and set up offices in Portland, Oregon, where he achieved distinction in legal circles. He came to Los Angeles in 1919 and assisted in organizing the Monolith company, becoming president of the firm.

Mr. Smith for many years has been engaged in the operation of industrial and shipbuilding corporations in the Pacific Northwest. Mr. Low joined the company in the capacity of sales manager. He has been active in the firm's forward movement in educating the public in the various uses of cement. Mr. Calkins and Mr. Trueblood had long experience in the cement business prior to joining the Monolith organization.

Its policy of customer ownership of stock and its work in educating the public in the uses of cement have firmly entrenched this fast-growing concern in the confidence of the public. A special train bearing large numbers of the company's stockholders, officers and employees will leave Los Angeles on June 22 to attend the formal opening of the new plant at Laramie. It is expected that they will be tendered an enthusiastic welcome by the citizens of that city.

Southern Operators in Sand and Gravel Organize an Association

About twenty representative sand and gravel producers of several southern states have organized the Southern Sand and Gravel Association with headquarters in Memphis, Tennessee. The objects of this association are: To promote and extend the use of the products of the industry; to provide an organization for the cooperation of the members and the coordination of their efforts with those of other trade associations and with governmental agencies and in the furtherance of all projects affecting the industry; and to establish and to maintain the highest standards of business practices, customs and usages among its members, and to protect the interests of the industry.

The following officers will serve for 1929: President, W. W. Fischer, Fischer Lime and Cement Company, Memphis, Tennessee; vice-president, C. B. Ireland, Montgomery Gravel Company, Montgomery, Alabama; recording secretary, H. B. Weston, Weston Sand & Gravel Company, Logtown, Mississippi; treasurer, V. A. Cordes, Wolf River Sand & Gravel Company, Memphis, Tennessee. The directors include: R. N. Hawkins, Kirkpatrick Sand & Cement Company, Birmingham, Alabama; C. C. Hawkins, Tennessee-Arkansas Gravel Company, Arkansas City, Arkansas; Lafar Lipscomb, Florida Gravel Company, Chattahoochee, Florida; Arthur P. Burke, Atlanta Sand & Supply Company, Atlanta, Georgia; W. W. House, Paducah Sand and Gravel Company, Paducah, Kentucky; H. H. Holloway, Holloway Gravel Company, Amite, Louisianna; T. W. Maddux, Brookhaven Gravel Company, Brookhaven, Mississippi; J. I. Foules, Missouri Portland Cement Company, Memphis, Tennessee.

The Empire State Sand and Gravel Producers' Association held a business and social meeting on May 3 at Utica, New York. This was attended by about thirty representative operators and equipment manufacturers. Among topics discussed was that of employing an engineer to develop a higher standard in the quality of aggregates and to handle problems that may arise between producers and consumers.

Allentown Regional Safety Meeting Proved Highly Instructive

THE regional safety meeting under the auspices of the Portland Cement Association, held at the American Hotel, Allentown, Pennsylvania, convened at two o'clock on May 23, 1929, with R. B. Fortuin, assistant to general manager of the Pennsylvania-Dixie Cement Corporation in the chair.

In his usual entertaining and informative manner, A. J. R. Curtis, assistant to general manager of the association, made the first address. Following this the 1928 Trophy winners for this region were introduced.

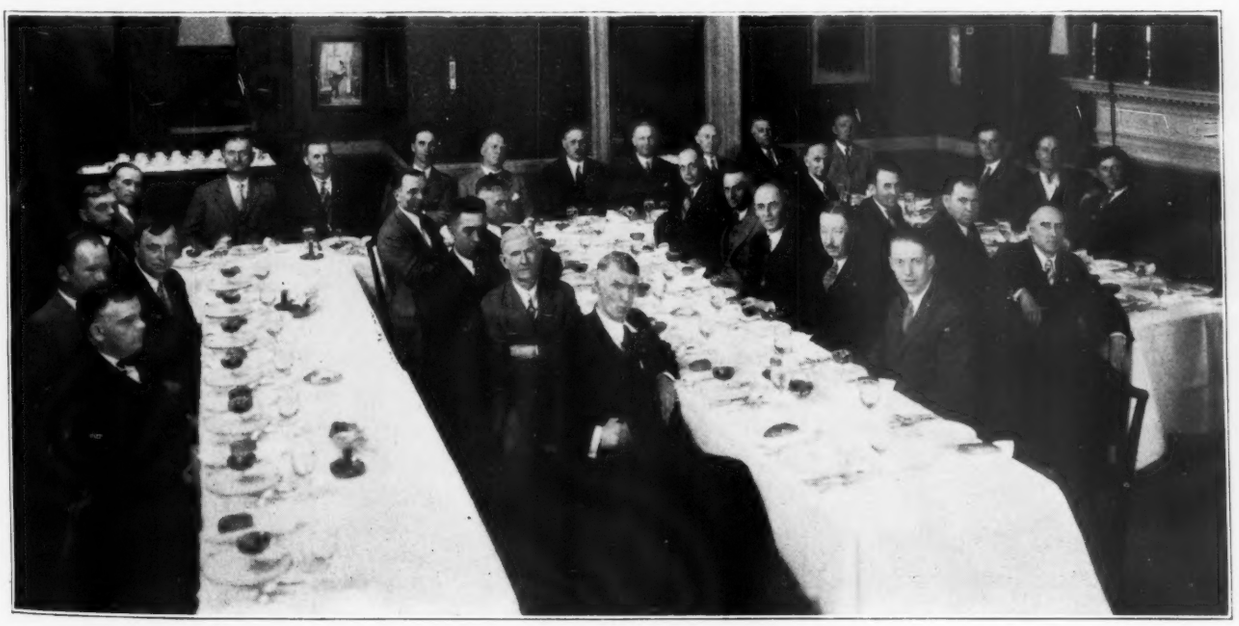
Thomas Quigley, chief of quarries, Commonwealth of Pennsylvania, then spoke upon Safety Work in Pennsylvania Cement Mills, as follows:

"It is not only a pleasure, but a great honor to be with you, as the representative of the Department of Labor and Industry of the Commonwealth of Pennsylvania, to join with you in the spring accident prevention meeting of your association.

"I regret very much that the Honorable Peter Glick, secretary of labor and industry, has been prevented from attending your meeting, but he has requested me to deliver to you this message. He is familiar with your industry, also with your activities for accident prevention. He stands 100 per cent back of you in your great work, and has requested me to assure you that nothing will be done during his administration to interfere in any way with the progress of your industry. While absent in person, his heart is with you in this great work.

"No other industry in this great Commonwealth of Pennsylvania has been more active in accident-prevention work than the cement manufacturers. The records made by your industry provide posi-

A. J. R. Curtis,
Secretary, Committee on Accident Prevention and Insurance, Portland Cement Association



Dinner Given by J. B. John to Delegates of Cement Mills which Worked without an Accident During 1928

R. B. Fortuin

tive proof of what can be done to protect life and limb when men and management cooperate 100 per cent for the elimination of accidents.

"The most serious problem confronting industrial managers today is the prevention of accidents. A careful study of industrial accident statistics shows us that 75 per cent of all accidents are preventable. Your association has proved that, through real safety work, accidents can be reduced to a previously undreamed of minimum. You have been pioneers in the safety movement and the record made by you has encouraged others to follow in your footsteps.

"While the accident prevention campaign is in its infancy, I am confident that we are on the right road, and in a few years we will be able to point with pride to the remarkable reduction in industrial accidents in Pennsylvania.

"Your industry is suffering today from foreign competition, and Congress seems more interested in the welfare of our European neighbors than in our American people. The Ways and Means Committee of Congress is much afraid to increase the tariff on cement to where it properly belongs lest they offend some of their beloved friends in France, Belgium, England and Germany. What we need in Washington are more congressmen with backbone, and fewer weak sisters who have wishbones in place of backbones. Our policy should be "America for Americans—first, last and all the time." Many other industries also are suffering. We are indeed fortunate in having in Washington, fighting night and day for the protection of our American industries, Joseph R. Grundy, and Senator David Reed. If we had a few more Grundys and Reeds in Washington, we would have a real tariff and 100 per cent protection for our American industries. That means real job safety for our men."

A motion picture next portrayed The Quarry Industry of Pennsylvania.

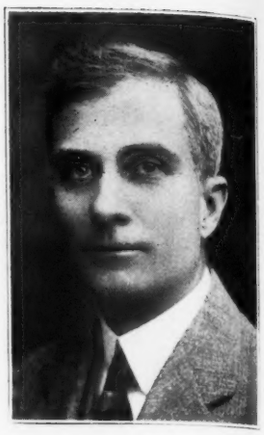
My Experience With the Safety Problem was the title of an address by John Roach, deputy commissioner of labor, State of New Jersey.

R. D. Currie, safety engineer, United States Bureau of Mines, spoke upon First Aid Training in Cement Mills.

D. Adam

Round Table Discussion

A round table discussion was concentrated, so far as possible, upon the three topics: Are We Getting the Most Out of the Significant Accident Bulletin? The value of Investigating and Analyzing the Cause of Accidents, and How Can We Reduce the Fall Accident Peak?



William P. Gano

Particular interest was indicated in making better use of the Significant Accident Bulletin, the monthly list of accidents distributed by the Portland Cement Association. Discussion brought out that practically all mills make these bulletins freely accessible to the workmen by posting on bulletin boards, sending marked copies direct to foremen and workmen, and in many cases by requiring foremen to read and discuss with their men such accident reports as pertain to each department.

Several expressions indicated a need for more complete information than that now furnished by the bulletin. A plea was made to members to report their accidents more comprehensively than in the past, and to the association to amplify the bulletin. The discussion on the subject was helpful and indicated that the accident-prevention work of the industry has grown more highly technical and requires for its further progress very complete, accurate and detailed reports of all accidents appearing to have significance.

The annual safety dinner, at 6:30, had, as chairman, D. Adam of the Lawrence Portland Cement Company, and, as toastmaster, Major Reninger, president of National Safety Council.

Mr. Curtis presented the official June No-Accident flags to the Lehigh Valley mills.

C. H. Stein, assistant to president, Central Railroad of New Jersey, spoke upon Some Railroad Ideas About Safety.

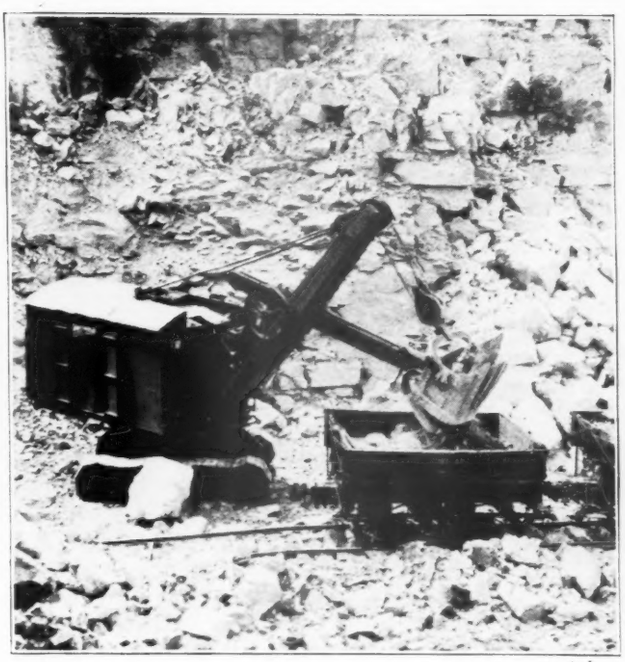
The occasion was enlivened by an orchestra furnished by the Nazareth Portland Cement Company, and by singing under the leadership of W. P. Gano, assistant General manager, Pennsylvania-Dixie Cement Corporation.

Plant of Cumberland Portland Cement Company In Third Year of Successful Operation

Cowan, Tennessee Plant Combines Compact Design With Unusual Efficiency of Operation

By W. E. TRAUFFER

THE PLANT of the Cumberland Portland Cement Company at Cowan, Tennessee, has just completed its second year of successful operation. Ground was broken on June 10, 1926, and the plant went into operation on April 28, 1927. The property on which the plant is located is in the picturesque foothills of the Cumberland Mountains on the main line of the Nashville, Chattanooga and St. Louis railroad, about half-way between Nashville and Chattanooga. The plant is of unusually compact design and when operating at full capacity has an output of 2,200 barrels of grey portland cement per day.



Loading Cars in Quarry

Formation and Character of Deposit

The limestone deposit at the plant is in the Chester-St. Louis-Warsaw subdivision of the Mississippian formation which, in turn, is part of the older division of carboniferous rocks. It is a part of the Bangor limestone with its related shales and in places is from 700 to 1,000 feet thick. The strata of limestone outcrop at the foot of the mountain where the plant is located and are almost horizontal. The stratification is quite pronounced and the stone has many vertical seams caused apparently by some local stresses which took place since the formation of the deposit. The clay is

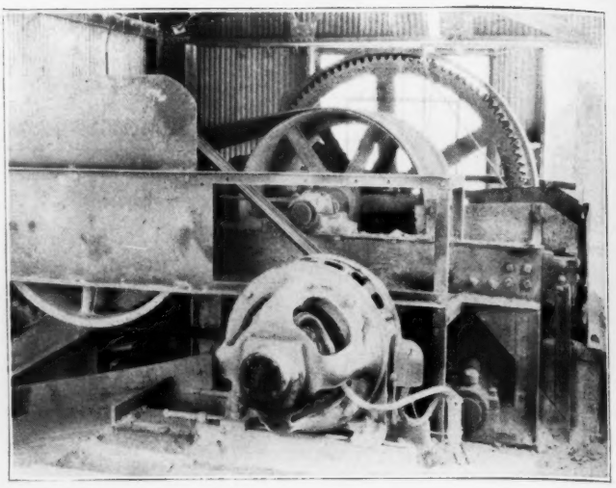
View of Plant from East End of Quarry

Well Drill at Top of Quarry Face

part of the original formation which has been eroded and washed down the mountain slopes to the lowlands.

Analyses

The stone has a very high calcium content and produces a light grey cement in spite of the reddish clay used. For the first four months of the plant's operation in 1927 a high quality of white portland cement was produced, but since that time the grey cement has been made exclusively. Following are typical analyses by percentages of the stone, clay and cement:



Main Conveyor from Primary Crusher to Secondary Crusher

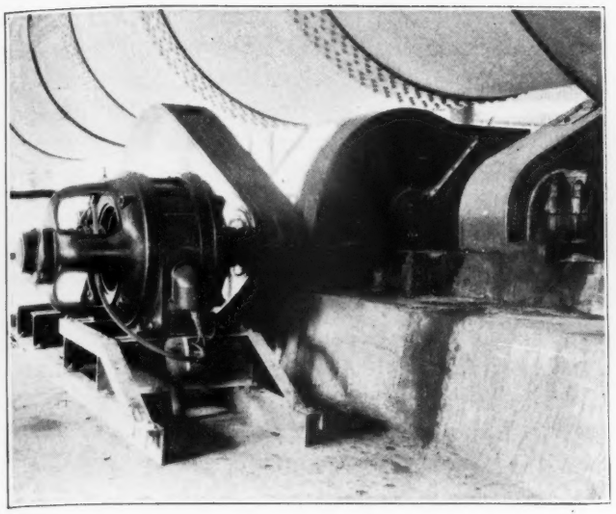
	Stone	*Clay*	*Cement*
SiO_2	5.12	64.58	22.02
Al_2O_3	1.36	18.21	6.31
Fe_2O_3	.56	7.31	2.43
CaO	51.20	0.60	64.00
MgO	0.90	0.86	2.05
Ignition loss	41.10	8.45	1.67
Insoluble residue	....	....	0.23

Typical cement briquettes test 246 lb. at 48 hr., 440 lb. at 28 days and 460 lb. after one year.

Stone Quarrying Operations

Due to the washing away of the clay overburden from the deposit, very little stripping is necessary. Blasthole drilling is done with an Armstrong electrically driven well drill. The quarry face is about

View from Top of Face Showing Cars Being Loaded in Quarry



One of the Kiln Drives

1,100 feet long and runs as high as 75 feet. Bank shots are made in single rows, using DuPont dynamite with a bottom load of 75 per cent gelatin. Cordeau-Bickford No. 6 safety fuse is used exclusively. Ingersoll-Rand R12 jackhammers are used for secondary drilling and 40 per cent DuPont dynamite for pop-hole shots.

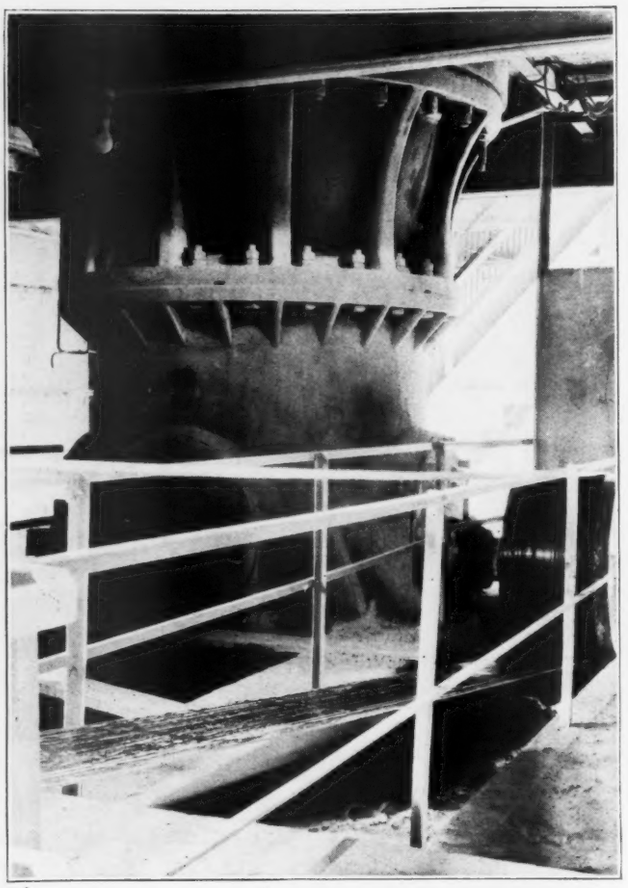
The stone is loaded into 6-yd. Western side-dump cars by a Marion 32 full-revolving electric shovel on caterpillar treads handling a 1¼-yd. dipper. These are hauled a distance of about 1,800 feet to the crusher house by a Lima Shay geared type 50-ton locomotive. A Huysler 50-ton gear drive locomotive and a Baldwin standard 60-ton locomotive, which are used for hauling clay and for general yard use, are also used for hauling rock when necessary.

Secondary Drilling in the Quarry

Stone Crushing and Storage

The cars of stone are hauled onto a steel trestle to the primary crusher building, where they are dumped into an Allis-Chalmers No. 18 gyratory crusher. The cars are dumped by a Curtis air hoist supported from the steel framework of the building. A Yale 25-ton chain block is used for handling repair parts. The crusher is belt-driven by a 150-hp. motor. It discharges onto a 36-in. inclined belt conveyor on 124-ft. centers which carries the material to the secondary crusher building, where it discharges into an Allis-Chalmers 2-

Kiln Building from Southwest



Primary Crusher. Conveyor to Secondary Crushers In Background

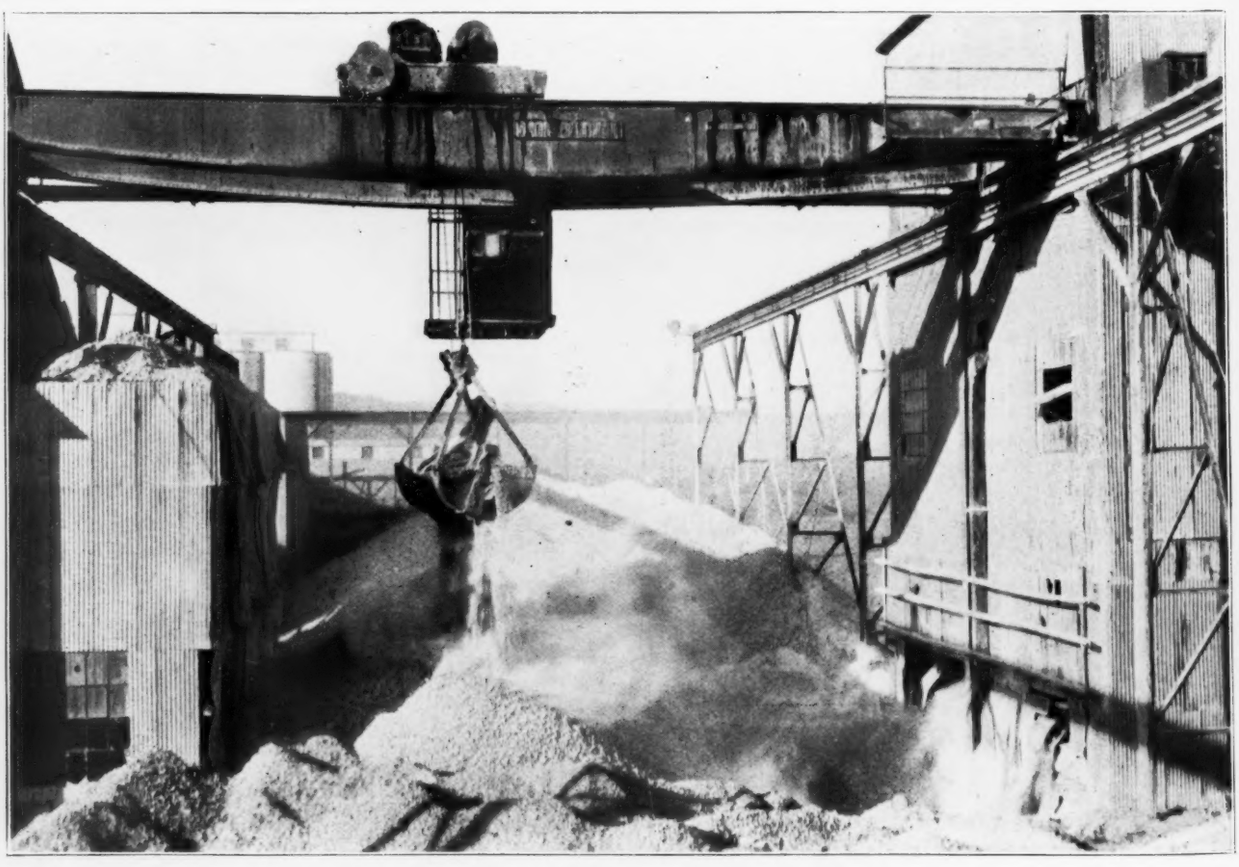
by 4-ft. revolving grizzly with 2½-in. spacing. The conveyor is driven at the head end by gear and Texrope drive by a 25-hp. motor. The grizzly is driven by chain from the conveyor. The conveyor was made by the Conveying Weigher Company and has a gravity take-up. The belting was furnished by the Goodrich Rubber Company.

The fines from the grizzly go by a chute direct to a pit alongside the building. The oversize discharges into a steel split hopper of 38-ton capacity which feeds two Allis-Chalmers Newhouse No. 10 gyratory crushers. These crushers discharge directly through chutes into the same pit in the open storage. Each of these crushers has an individual oil tank and pump.

A 5½-ton Shepard overhead crane traveling over the open storage and handling Blaw-Knox Dreadnaught 2¼-yd. clamshell bucket takes the stone from the pit and distributes over the storage pile. This crane also handles the stone from storage into steel bins in the raw grind building. These feed two Allis-Chalmers 7- by 26-ft. Compeb mills, each of which is spur gear driven by a 500 hp. synchronous motor through a Cutler-Hammer magnetic clutch. Clay is added at the mill feed by a 4-in. pipe from the clay storage basin.

Digging and Handling Clay

The clay is a sedimentary deposit which was eroded and washed down from the steep mountain



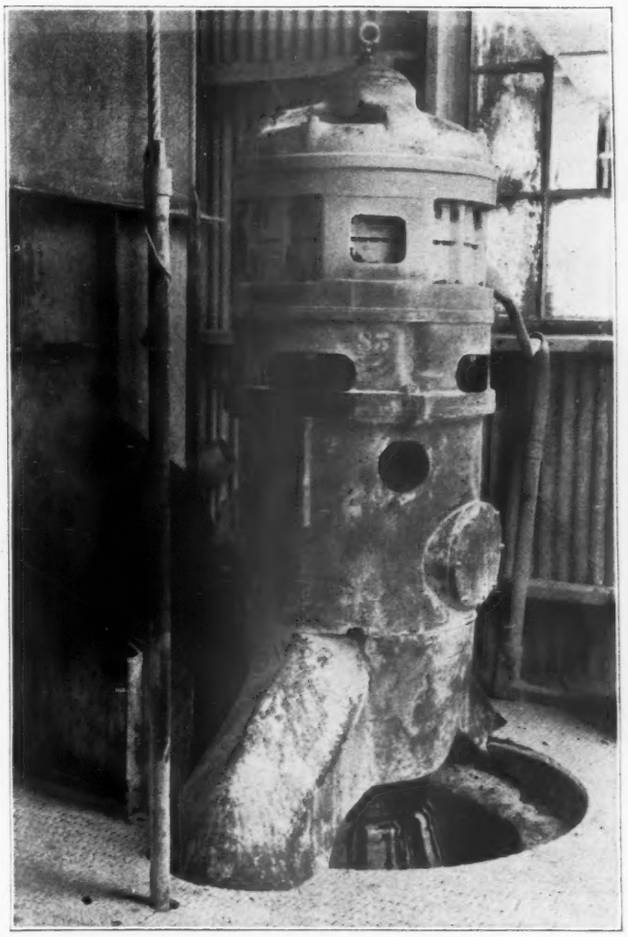
Overhead Crane Handling Stone to Storage from Crusher Discharge Pit

slopes through the ages and deposited at the west foot of the mountains in a level plain many square miles in area, forming an almost inexhaustible source of supply. The average depth of this deposit is about 15 feet, although in some places it is much more. The pit being worked at present is about 1,800 feet southwest of the plant.

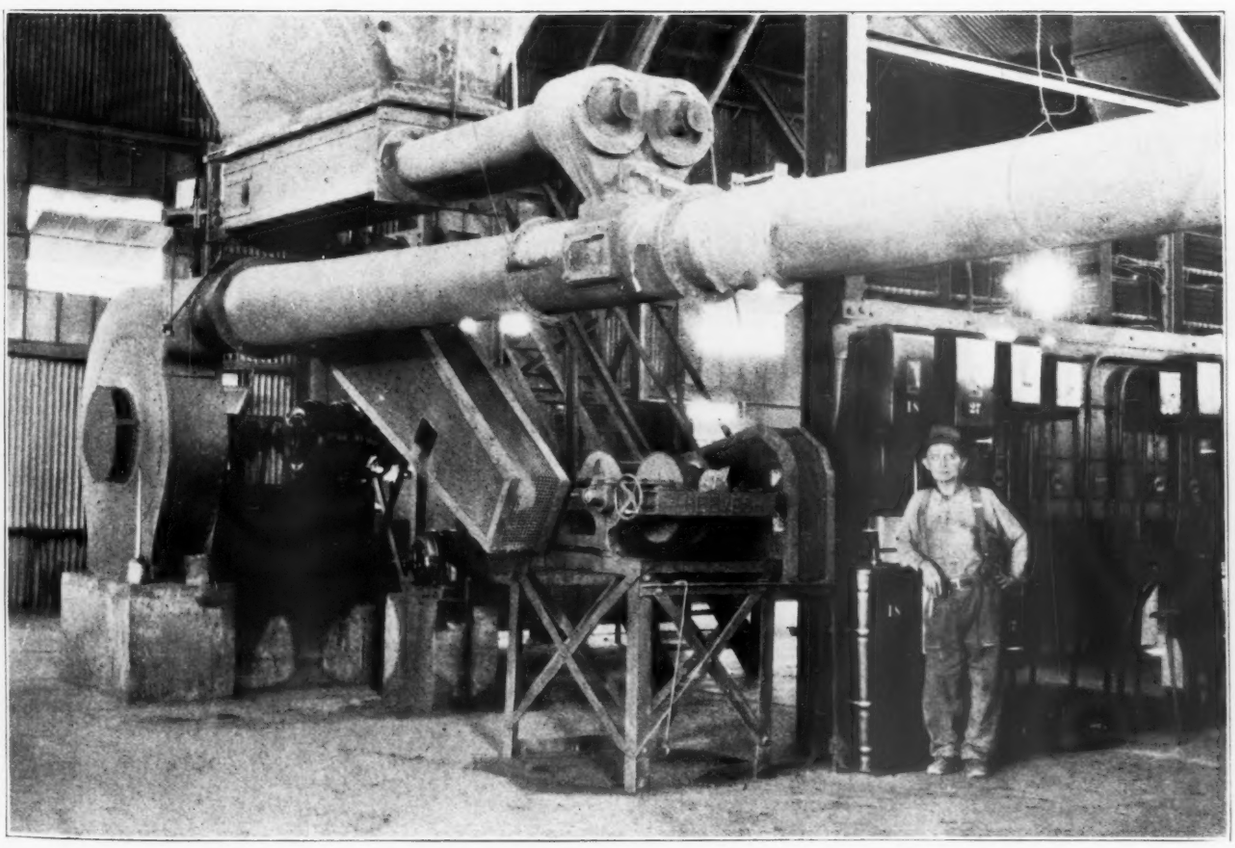
The clay is excavated by an Industrial ¾-yd. caterpillar steam shovel loading into Western 6-yd. side-dump cars. These are hauled to the plant and dumped into a pit alongside the track. The same overhead crane which handles the stone loads the clay from this pit into an Allis-Chalmers American 26-ft. wash mill. Water is added in sufficient quantities to make a mixture with about 45 per cent moisture. This is agitated by a rotating mixer driven through double reduction belt and gear drive by a 75-hp. motor. The clay slip is pumped by a 5-in. by 5-in. automatic air-lift pump to a concrete storage tank on the mountainside above the plant. This tank feeds by gravity to the raw grinding mills.

Slurry Mixing and Feeding

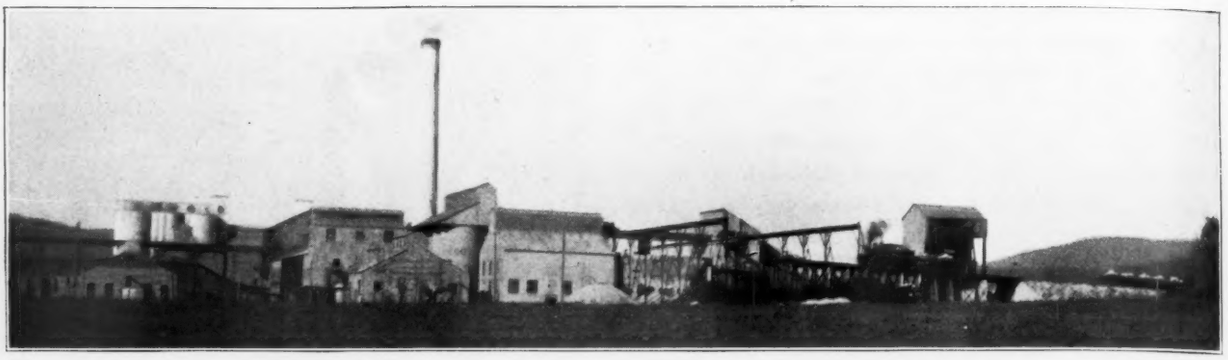
The slurry is pumped from both of the Compeb mills by a 5-in. by 5-in. Allis-Chalmers air-lift pump into two steel storage tanks under the mills. An automatic electric valve arrangement allows one of these tanks to fill while the other is being emptied. The slurry is pumped from the tanks to eight concrete storage tanks of 1,000-bbl. capacity



Feed from Bin to Secondary Crusher



Kiln Feed Mechanism and Control Board. Coal Bin and Blower at Left. Feed Regulator in Center

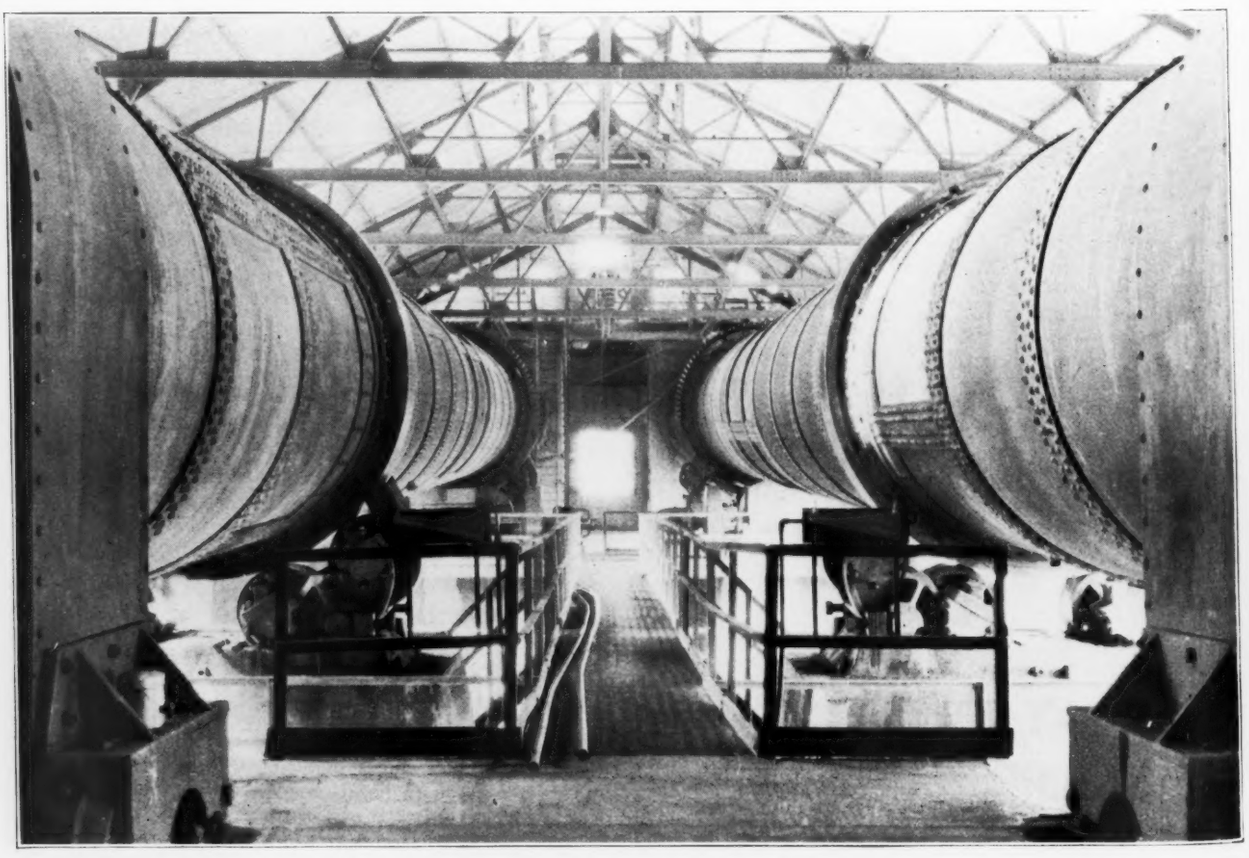


General View of Plant from South

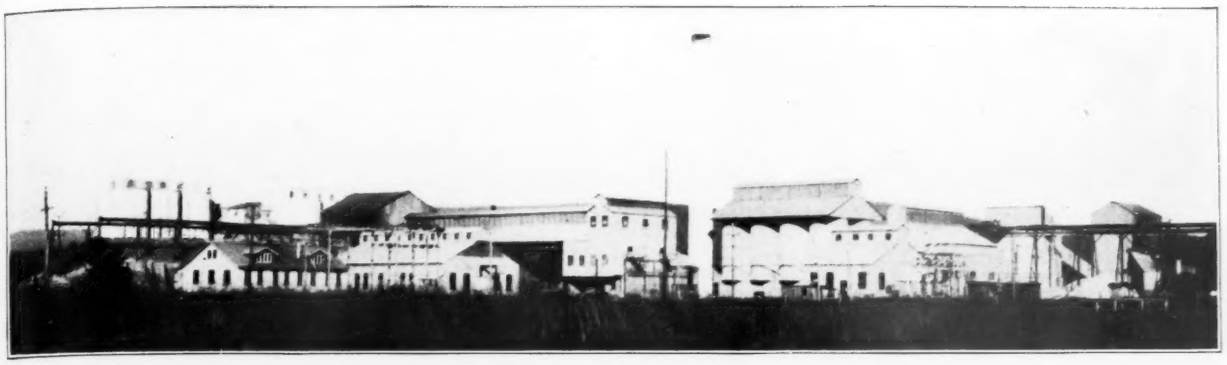
each. An opening under each of these tanks is used both as an inlet and outlet, an arrangement of three valves under each tank allowing the slurry to enter through a 6-in. pipe and leave through an 8-in. pipe. The slurry in the tanks is kept in motion by a system of air agitation.

The tanks are roofed over with a structural steel and corrugated metal housing. A walkway under this housing permits measuring and sampling of the slurry. This walkway is reached from the ground by a Weller man-lift elevator. The slurry is piped from the storage tanks to two circular concrete correcting tanks with a capacity of 1,500 barrels each, adjoining the kiln building. Gravity feed is used, the tops of these tanks being on a level with the bottoms of the storage tanks. Each of the correcting tanks has a Dorr mechanical and air agitator both driven by belt and gear from the same 20-hp. motor. A turtle valve on the end of the air line automatically closes if the air pressure is reduced below a certain point.

Another 5-in. by 5-in. air lift pump in a concrete pit pumps the slurry from the correcting tanks into two steel slurry feed tanks above the kilns. These tanks are so arranged that if the pump furnishes more slurry than is needed, the surplus overflows through a pipe back to the correcting tanks. These tanks feed by gravity to two Allis-Chalmers ferris-wheel feeders, each operated by a Reeves No. 1 V-belt speed regulator which is rope-driven from the kiln drive.



Looking Along Kilns from Firing End



Plant from Southwest

Kiln Operation

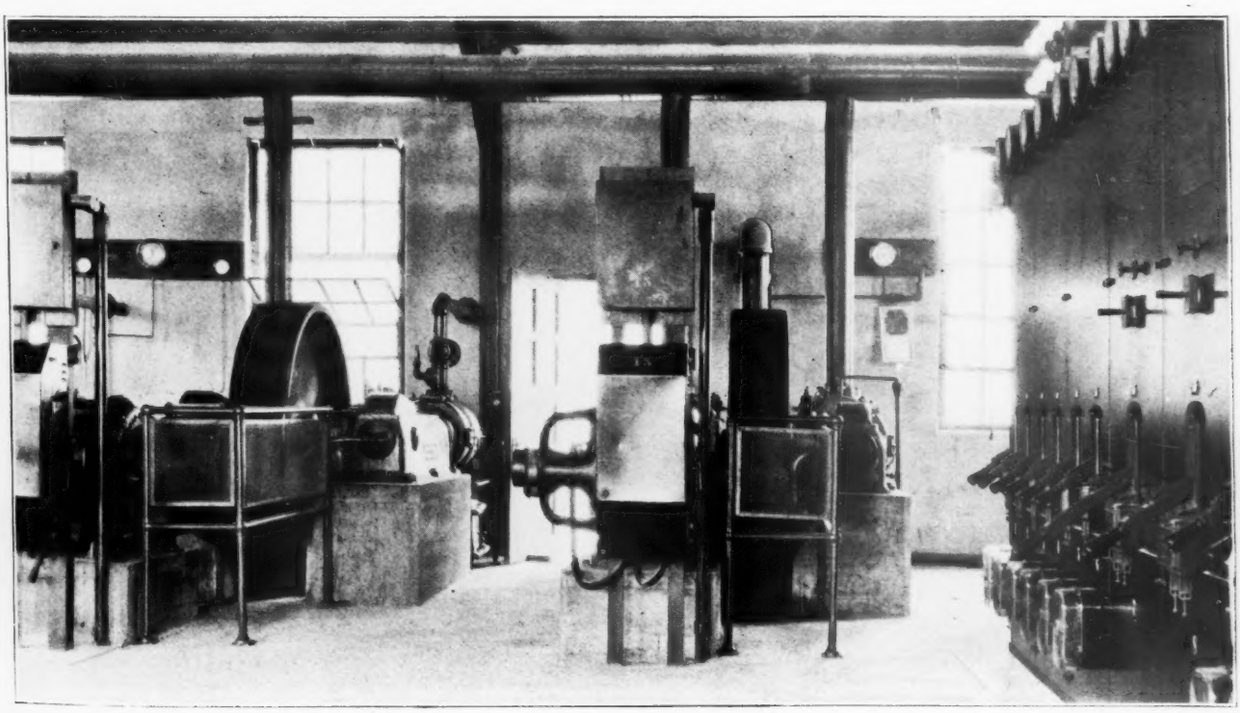
Each of the two Allis-Chalmers 10-ft. by 150-ft. kilns is driven through a Link-Belt silent chain drive and enclosed gears by a 75-hp. motor. They are ordinarily run at a speed of about one revolution in 2 min. 25 sec., each kiln having a Bristol revolution counter to check the speed. The kiln heat is controlled through a pyrometer at the feed end of each kiln which registers on a Bristol recording pyrometer in the laboratory. Harbison-Walker Alusite kiln lining is used.

The clinker discharges from the kilns into brick pits underneath. Four drag-chain conveyors, only two of which are used at one time, carry the clinker to a concrete storage pit. A second 5½-ton Shepard overhead crane unit with a Blaw-Knox clamshell bucket transfers the clinker from the pit to an outdoor cooling and storage pile. Each of the chain conveyors is driven through a Link-Belt silent-chain drive.

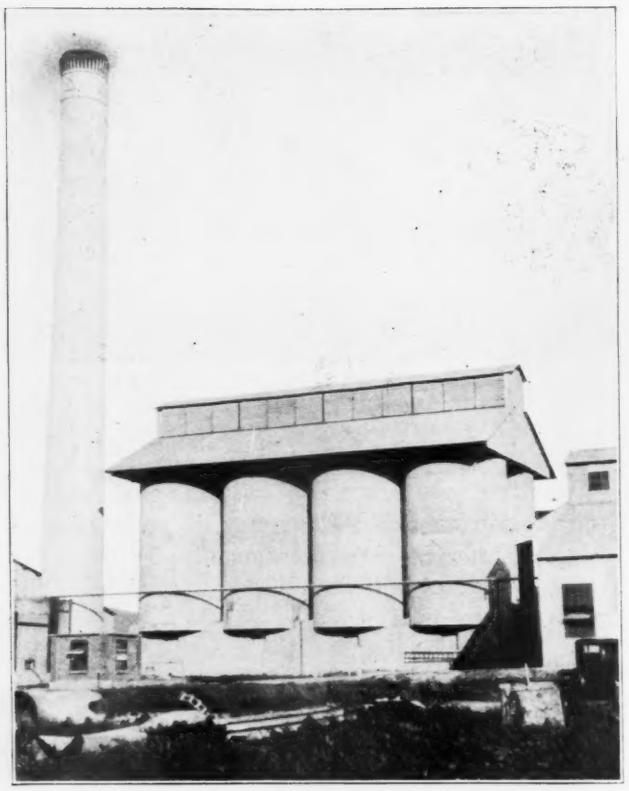
Coal Handling

Coal is shipped into the plant from coal fields at Tracy City, about 20 miles away, in railroad gondolas and unloaded into storage piles by the same overhead crane that handles the clinker. The crane feeds the coal from the piles to a steel hopper in the coal mill building. This hopper feeds into an Allis-Chalmers 5-ft. by 60-ft. rotary drier which is hand fired. The dryer discharges by a Jeffrey bucket elevator through a chute into a steel hopper. This feeds into an Allis-Chalmers 6-ft. by 22-ft. double Compeb mill which is driven through a Cutler-Hammer magnetic clutch by an Allis-Chalmers 300-hp. synchronous motor. Both the drier and the mill are equipped with Allis-Chalmers sling feeds of the same type used on the raw grinding mills.

The coal mill discharges into a Jeffrey elevator which feeds either direct to a 21-ton steel storage tank in the coal building or to a Jeffrey screw conveyor to the kiln building. This storage tank feeds



Interior of Power House, Showing Compressors and Switchboard

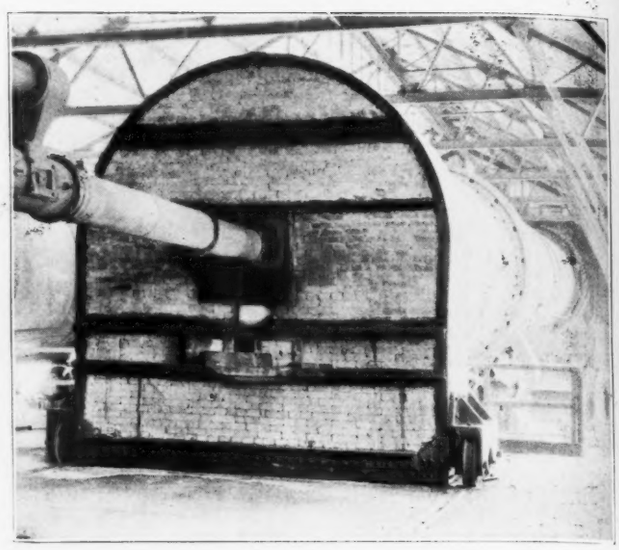


Slurry Tanks and Stack from Southwest

by screw conveyor to the same elevator to the kiln building. A Clark dust-collecting system takes the dust from the dryer and discharges into the same bin. In the kiln building the coal goes to two 7-ton capacity steel hoppers, one for each kiln, each feeding by a screw conveyor to the kiln feed pipe. A blast of air from an American Blower Company Sirocco Size 9 blower at each pipe feeds the coal to the kilns. A Reeves No. 2 speed regulator under each hopper regulates the speed of the coal feed conveyors.

Gypsum and Clinker Grinding

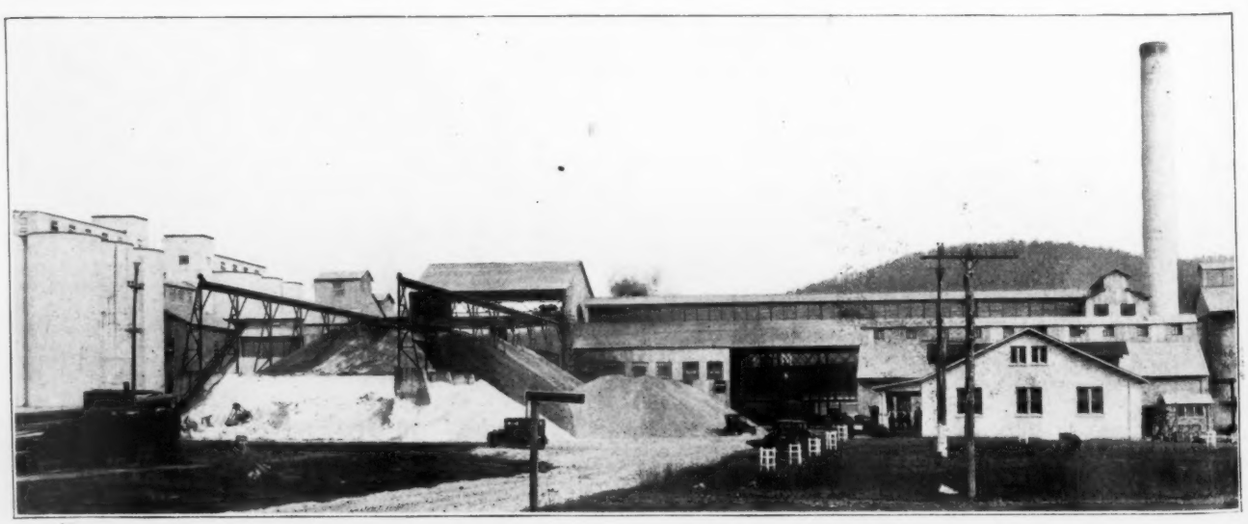
Gypsum in finely ground form is received in railroad gondolas and unloaded by the same overhead crane which handles the clinker and coal into an outdoor storage pile. The crane feeds from the stockpile to a platform at the finish mill building, the same crane also feeding the clinker from storage to a hopper next to the platform. The gypsum is shoveled by hand in the correct proportion into the clinker hopper which feeds to two Allis-Chalmers 7-ft. by 26-ft. finish grinding mills. Each of the mills is driven by a 500-hp. Allis-Chalmers synchronous motor with a Cutler-Hammer magnetic clutch. The mills discharge into a reversible Jeffrey screw conveyor feeding in one direction to a 4-in. Fuller-Kinyon pump for the west unit of silos and to a Jeffrey elevator on the other end for the east unit of silos.



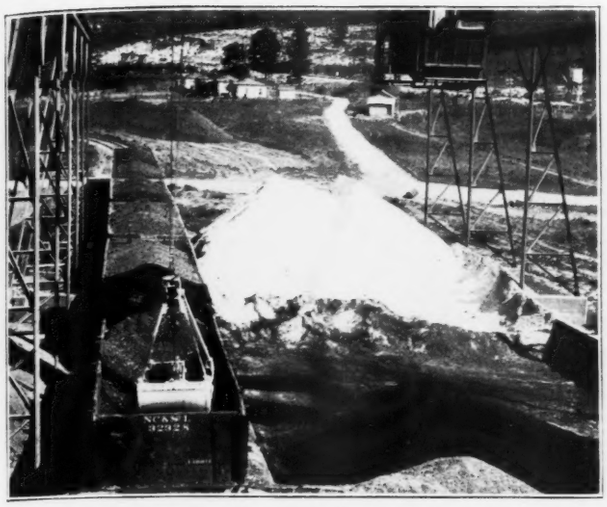
Firing End of Kiln

Cement Storage and Packing

The silos are in two units, one on each side of the packhouse. Each unit consists of six silos of 6,800-bbl. capacity each and 4 interstices each holding 1,600 bbl. The west unit is filled by a pipe line from the Fuller-Kinyon pump with Fuller-



View of Cumberland Plant from West. Cement Silos Left, Office Right, Kiln Building in Background



Unloading Coal into Storage. Ground Gypsum In Background

Feed End of Finish Mill

Kinyon valves to control distribution to the desired silos. The elevator to the east unit discharges into a screw conveyor which feeds another elevator and screw conveyor which distribute to the various silos and interstices.

Each unit of silos feeds by a series of screw conveyors to an elevator on each side of the packhouse, both feeding to a Jeffrey revolving screen. The fines go to a screw conveyor which feeds the four 3-tube Bates packers. The sacked cement is loaded on Bates hand trucks to cars on either side of the building. Weights are checked occasionally on a portable Fairbanks beam scale alongside the packers.

Office and Laboratories

The office building is a neat stucco building with concrete foundations and basement. It contains the general plant offices, superintendent's office, and the chemical and physical laboratories. The laboratories, which are unusually complete, are entirely electrically equipped and have many labor-saving devices which were designed by W. S. Ernst, the chief chemist.

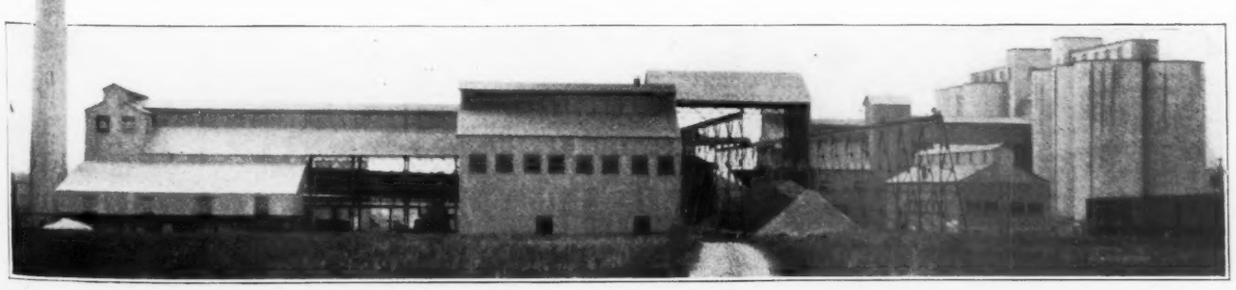
The chemical laboratory contains, among other equipment, the Bristol recording pyrometer which controls the kiln heat, two Becker balances, one of which is a Chainomatic, and an Arthur H. Thomas Company electric oven. The physical laboratory contains two Olsen automatic briquette testers and other equipment for making all necessary tests. There are also separate foreign testing laboratories for the use of visiting testers.

Another laboratory in the basement contains additional equipment. A small Frigidaire unit regulates the temperature in the moist closets. A concrete table along one wall has mounted upon it a Tyler Ro-Tap sieve shaker, a Brown jaw crusher and a pulverizer, the latter two being belt-driven from a countershaft by an electric motor under the table. There is also an Abbe 2-jar ball mill and a number of other pieces of equipment.

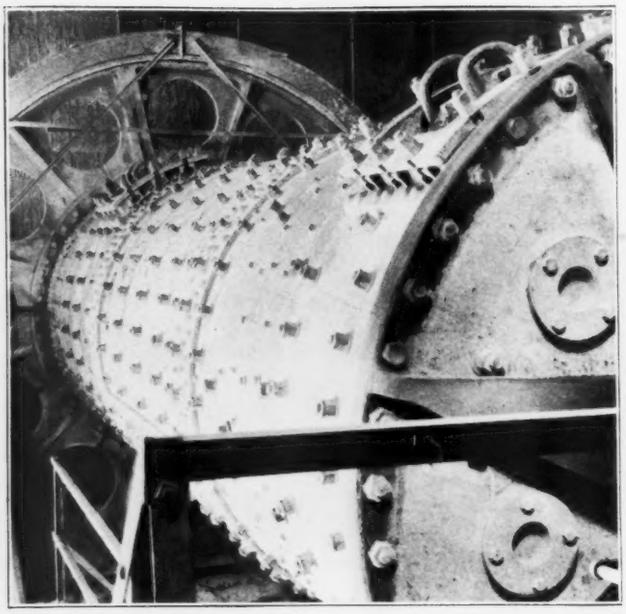
Power House and Machine Shop

The power house is a structural steel and corrugated metal building adjacent to the raw grind building. Power comes into the plant at 44,000 volts to a Westinghouse out-door sub-station which reduces to 2,300 and 440 volts. An 11-panel switchboard in the power house controls the entire plant. Three generating sets with 2,300 volt 60-hp. motors, driving 120-volt generators furnish direct current for excitation of the synchronous motors and for the solenoid air-lift slurry pumps.

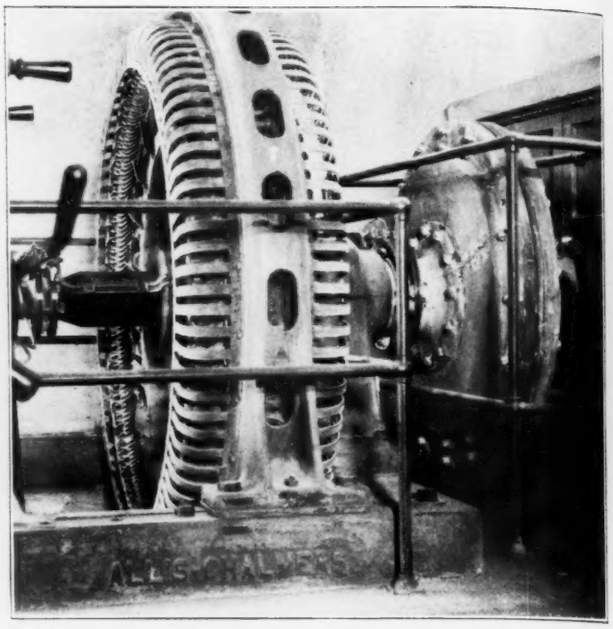
Two Ingersoll-Rand Imperial Type 10 air com-



View of Plant from East. Kiln Building, Left; Coal Building and Clinker Storage, Center; Cement Silos, Right



One of the Finish Mills



Magnetic Clutch Driving Finish Grinding Mill

pressors, each with 9¼-in. by 12-in. and 15-in by 12-in. cylinders, furnish air at high pressure for the quarry drills. Another compressor of the same type with 14-in by 12-in. cylinders furnishes air at low pressure for slurry agitation. Each of these compressors is driven by a 100-hp. motor. These motors, as well as all motors and electrical equipment throughout the plant except the sub-station and starting switches, were furnished by the Allis-Chalmers Manufacturing Company. Allen-Bradley starting switches are used throughout the plant.

An Allis-Chalmers 200-g.p.m. centrifugal pump in a brick pump house on the bank of a creek a short distance from the plant furnishes water for the slurry and for cooling purposes. A steel tank on the side of the mountain is used for storage. A 2-in. Allis-Chalmers centrifugal pump in a small building near the power house pumps the waste water back to the storage tank.

A steel frame and concrete block building contains the machine shop and storeroom. Neatly arranged racks and shelves contain the various smaller pieces of equipment, such as bolts, which require replacement from time to time. A steel platform forming a second floor is used to store all of the larger units. The machine shop is very

Close-up View of Cement Silos and Clinker Storage from West

View from East: Gypsum, Clinker, and Coal Storage at Left; Sack House and Finish Mill Building In Center; Cement Silos at Right

complete and contains, among other equipment, a 15-in. South Bend lathe, a 24-in. by 14-ft. engine lathe, a 24-in. shaper, and a 3-ft. radial drill, the latter three being made by the American Tool Works.

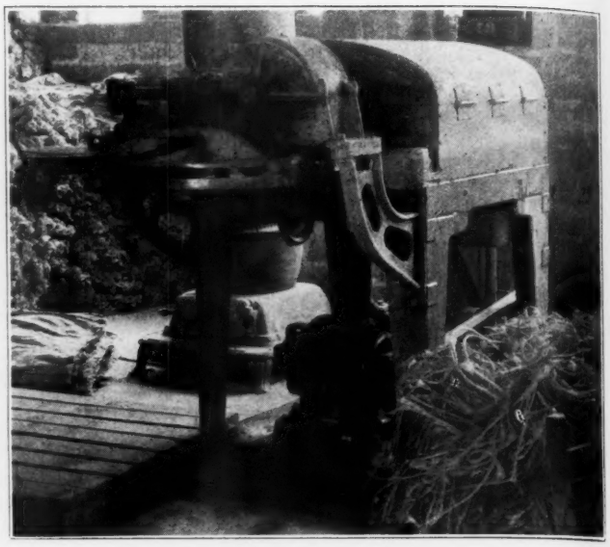
Miscellaneous

The entire plant was designed by R. T. Miller together with the Allis-Chalmers Manufacturing Company, which also furnished most of the equipment. Mr. Miller was in general charge of promotion, design and construction. All foundation work, installation of machinery, and much of the detail design of the plant was done under the supervision of O. H. Sawdy, engineer for the cement company, in co-operation with the superintendent, Frank Pearson. The slurry and correction tanks and the cement silos were built by the Kaucher-Hodges Company and all steel buildings were furnished and erected by the Nashville Bridge Company. The stack, which is 150 feet high and 9 feet in interior diameter at the top, was built by the Rust Engineering Company. Jeffrey screw conveyors and bucket elevators are used throughout the plant.

The buildings are all of permanent fireproof construction. Concrete foundations are used throughout. The primary and secondary crusher buildings, the raw mill, kiln, coal and finish mill build-

Interior of Parts and Storage Building

One of the Safety Posters Distributed about the Plant



Sack-Tier in Sack House

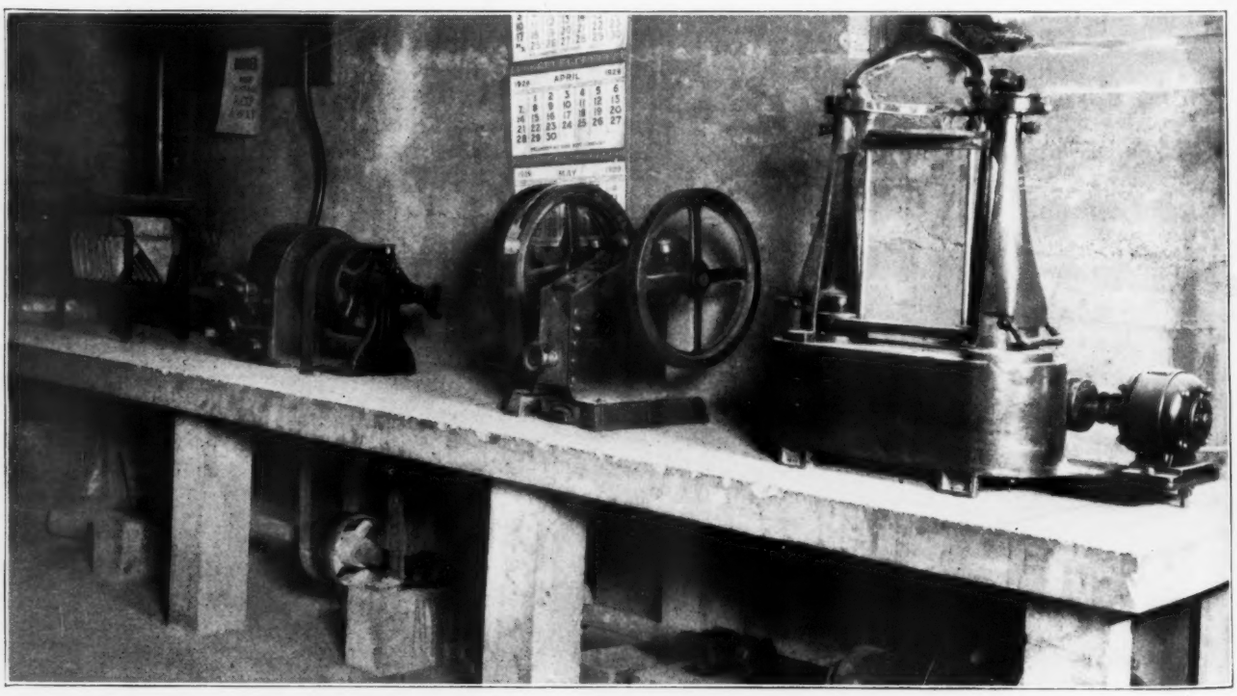
ings, the power house and the housing over the slurry storage tanks are of structural steel construction and have roofing and siding of corrugated sheet metal. The machine shop and the sack house are of structural steel and concrete block construction.

Safety Record

The safety of the employes is one of the primary considerations at this plant. No effort or expense is spared in eliminating hazards or in educating the employes in the principles of safety. Bulletin boards at various points about the plant and property are kept filled with a series of safety posters as well as the usual plant notices. The plant is entered in the National Safety Competition and has built up a very effective safety organization. The result of this work is evidenced by the fact that, up to the time of the visit to the plant, it had operated 195 days without a single lost-time accident.

Officers

A reorganization of the company took place on March 23, 1929, when the following new officers were elected: M. C. Monday, president and general manager; E. L. Hampton, first vice-president; R. T. Miller, second vice-president; and A. N. Trice, secretary and treasurer. No changes were made in the plant organization, which consists of: Frank Pearson, superintendent; W. S. Ernst, chief



Laboratory in Basement of Office Building, Showing Concrete Table, with Pulverizer, Jaw Crusher, and Sieve Shaker

Left to Right: Superintendent Frank Pearson, Chief Chemist W. S. Ernst, Plant Superintendent A. J. Turner

chemist; A. J. Turner, general foreman; L. B. Reifsneider, quarry superintendent, and C. E. Davis, chief electrician.

Memphis Chosen

(*Continued from page 53*)

to assist the main committee in completing its work.

"The Commissioner of Internal Revenue has advised the association of a change in policy affecting the depreciation studies which they have been making in all major lines of industry in the country. The fear has been expressed in some quarters that it would be necessary, following the submission of recommendations of our depreciation committee and the committees of other trade associations, to enter into an agreement with the commissioner which would make our recommendations binding upon the members of the industry, unless such substantial discrepancies later became apparent as to warrant the reopening of the entire subject. The Commissioner of Internal Revenue has now advised us that he will not require the entering into of such an agreement as this, but will accept the reports of our depreciation committee.

"Depreciation for income tax purposes is defined as the gradual exhaustion of the usefulness of property employed in the trade or business of the taxpayer, such exhaustion comprising wear and tear, decay or decline from natural causes, and various forms of obsolescence such as are attributable to the normal progress of the art, inadequacy to the growing needs of business, and the necessity of replacement by new inventions. The importance of a thorough understanding of depreciation practices by every sand and gravel producer can hardly be over-emphasized."

Stephan Stepanian rendered the report of the standard specifications committee, and introduced R. L. Lockwood of the Division of Simplified Practice, Department of Commerce, who told how the division had assisted in simplifying conditions in both the face brick and coal industries, and explained how the department functions in these matters. He expressed the opinion that the department could standardize and simplify the sand and gravel industry. The board passed a motion made by J. C. Buckbee and seconded by G. W. Renwich that the association cooperate with the Committee of Standard Specifications in adopting a set of standards.

The chief business of the meeting concerned the place for holding the next annual convention. Invitations had been received from practically every large city in the United States and Canada. The ultimate decision gave to Memphis the honor of entertaining the association, and the dates were fixed for January 27, 28, and 29, 1930, with the Peabody Hotel as headquarters. W. W. Fisher was appointed chairman of the convention.

Marianna Lime Has Rapid Growth

(*Continued from page 60*)

type of road-base is used extensively in the states of Florida, Georgia and Alabama usually with various forms of asphalt tops.

This company also operates a plant at White Cliffs, Arkansas, under the name of Arkansas Lime Products Company. Paint filler, agricultural lime, asphalt filler, whiting and road-base are produced. The main offices are in Marianna. A. M. Lewis is president; J. F. Lowden is vice-president and D. A. Moylan is secretary and treasurer. J. L. Godwin is general superintendent of all the plants.

How Can Water-Soaked Wood Be Separated From Sand and Gravel?

All trade journals receive requests from readers for advice concerning difficulties experienced in regular operations, and editors always desire to respond with worth-while suggestions. Occasionally, however, a question is propounded that stumps us. One such inquiry has been received recently from different operators. Thinking the answer may have been solved by some of our other readers, we offer the question in the expectation that a satisfying reply may be passed on to the operators who are experiencing trouble. Is there an effective means of removing water-logged bits of wood, sticks or bark from sand and gravel?

Central Plants for Manufacturing and Delivering Ready-Mixed Concrete—III

This Installment Concludes the General Discussion of Mixers for Central Plants and Discusses Some of the Methods of Transportation and Transit Mixing

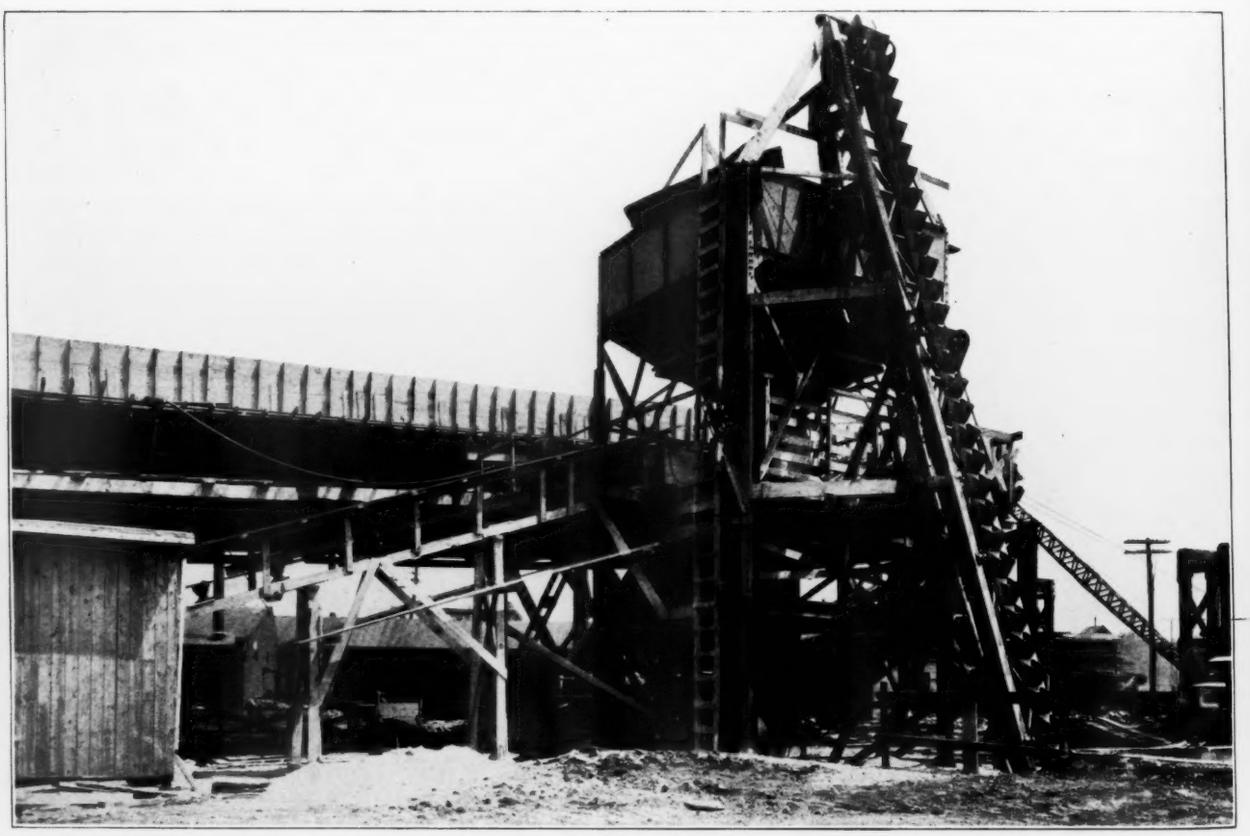
By J. O. DURKEE

IN THE field, it is evident that laboratory conditions cannot be established and, to secure results, an equalizing system can be adopted whereby inconsistencies in the aggregate may be automatically overcome so that the first batch and all succeeding batches are according to specifications. The Blaw-Knox inundation system and its mechanical proportioning equipment are said to form the necessary and logical control to laboratory controlled concrete in a manner which is practical as well as economical for ready-mix concrete plants.

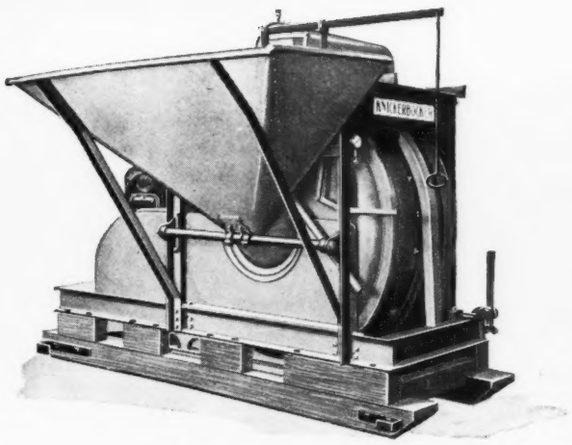
"Design and Control of Concrete Mixtures," published by the Portland Cement Association, says: "Of greatest importance is the proper control of the mixing water. The whole intent and purpose of designing a mixture by the water-cement ratio strength can well be lost if the necessary precautions are not taken to maintain, throughout the duration of a job, the accurate measurement of the water. Corrections for the moisture content must be made at the proper times. During varying weather conditions, or when stockpiles have been subjected to rains or to rapid drying out, the tests should be more frequent."

This would indicate that a careful check should be maintained on the moisture content of the aggregates entering into the mix, and that the free water entering the mix should be carefully measured. Several devices for this purpose are being offered and a partial discussion and illustration of the most common are included in this article.

Where transit mixers are not used, the heart of the plant is the mixer itself, an item that is comparatively small in the initial construction budget, but which is naturally of paramount importance. As the whole operation depends upon the successful, continued performance of the mixer, the plant



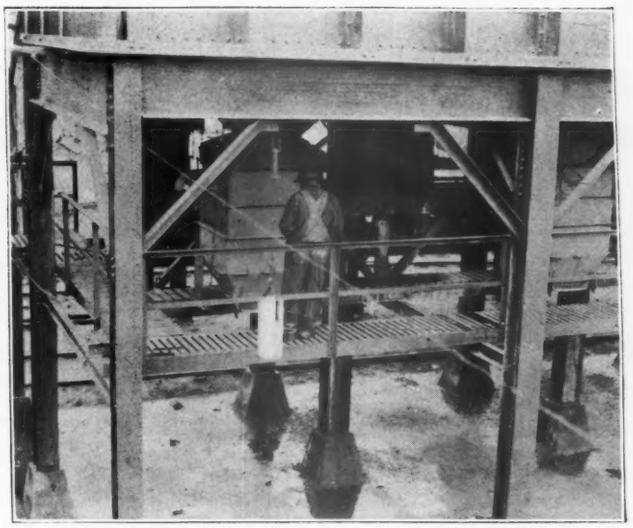
These Aggregates Are Dumped Into the Pit by Trucks and Lifted to the Top of the Bins by a Haiss Continuous Bucket Type Elevator, with 60-ft. Centers. To the Left Is Shown a Haiss Belt Conveyor for Lifting Cement Bags from the Shed to Mixing Floor



Knickerbocker 28-S Mixer for Use in Central Mixing Plants

operator should readily see the advantage in buying the best mixing equipment he can get, considering both its first and its maintenance cost over a period of years.

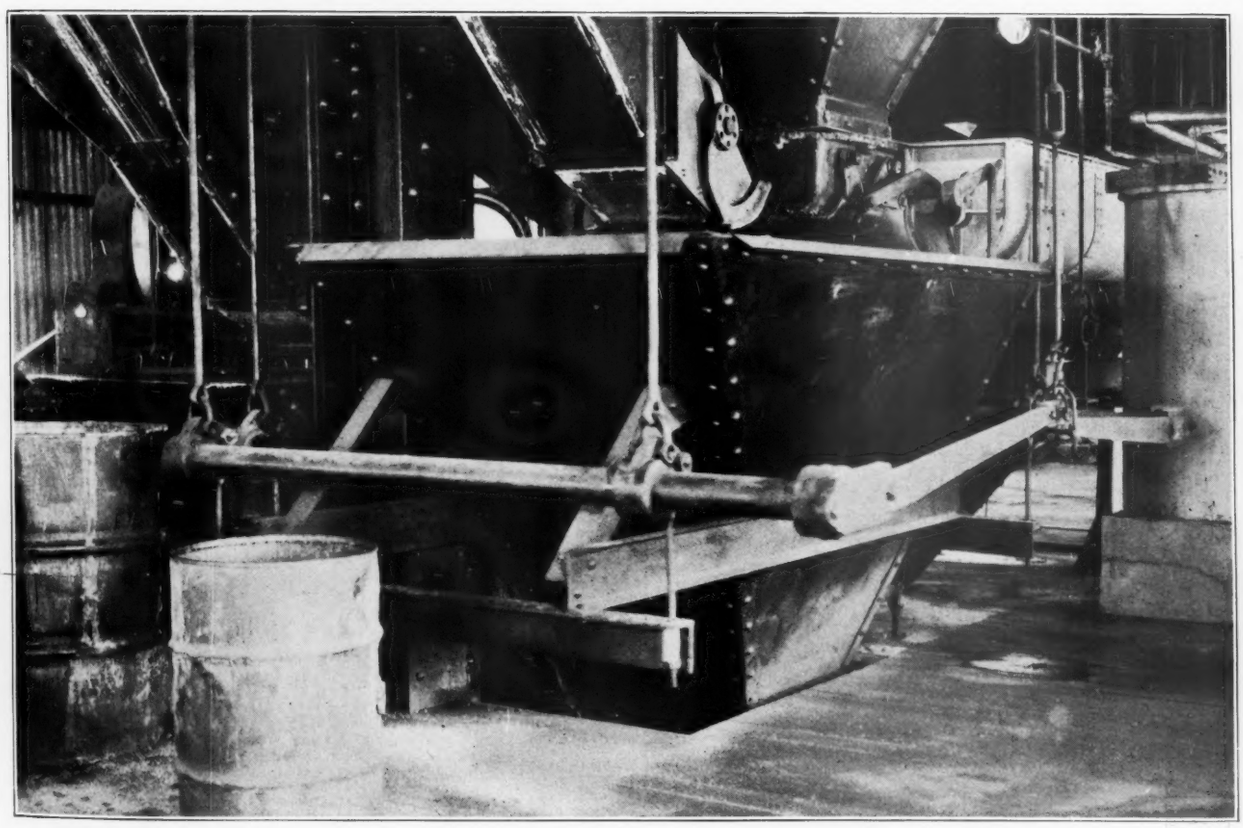
Among the manufacturers, the Knickerbocker Company developed a unit for central plant use—the 28-S mixer. It handles a one-yard batch. When handled in pairs, these mixers give flexibility of output. The pair will fill a truck with as heavy a load as most municipalities will permit on the highway. If something interrupts the operation of one machine, the plant still has mixing capacity. In slack times, production can easily be cut in half. With the moisture in the sand and aggregate already determined, the Knickerbocker finishes the job of accurate moisture control by adding mixing water through a new type of water tank. This tank, located over the mixer, measures the water with an extreme degree of accuracy and delivers it quickly into the drum, with no dribble. The tank refills quickly, due to large inlets. Adjustment of the proper amount of water to be admitted to the drum for each batch is quickly made and positively set by a wing-nut control on one end of the tank.



Typical Batch Hoppers and Belt Conveyor Under Bins

Preventing Chill

Winter building has become so prevalent recently that the control mixing plant should figure on a

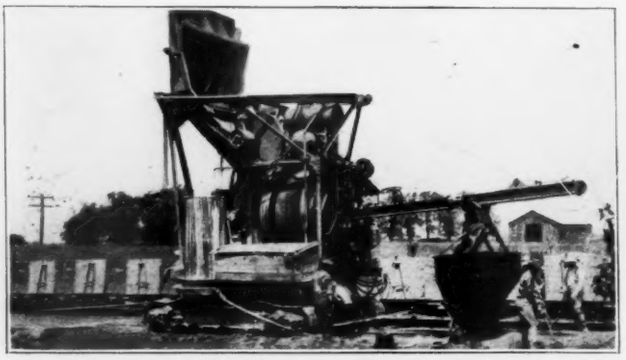


A Weighing Hopper with Fairbanks Springless Scales, Screw Conveyor and Blaw-Knox Water-Measuring Tank

A Plymouth Locomotive Used for Transporting Load of Concrete in Hopper Car

fair volume of business during the cold months and authorities advise that common or rock salt or other admixtures should not be added to concrete to prevent freezing. When chemicals are used in quantities sufficient to lower the freezing point of water to any extent, they reduce the strength of the concrete.

Owners of central mixing plants have rapidly come to realize the value of delivering high quality concrete to the buyer, and that in cold weather the quality of the concrete is seriously affected if heating precautions are not taken. Temperature affects the rate at which concrete hardens, the lower temperatures reducing the rate to practically nil at the freezing point. Alternate freezing and thawing will completely destroy concrete, while a single freezing may impair the strength and durability. Because of these facts special precautions are required for cold weather work and should be employed when it is expected that the temperature will fall as low as 50 degrees F. By supplying live steam to the aggregates through a perforated grillage of pipes, lining the storage bins and using hot mixing water, warm concrete can be delivered to



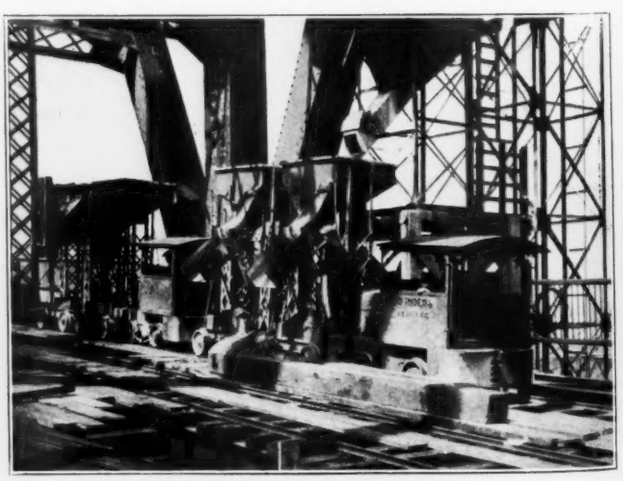
A Method of Handling Western Batch Boxes Loaded With Properly Proportioned Batches

Columbus Cement Elevator, Blaw-Knox Bin, and Ransome Mixer

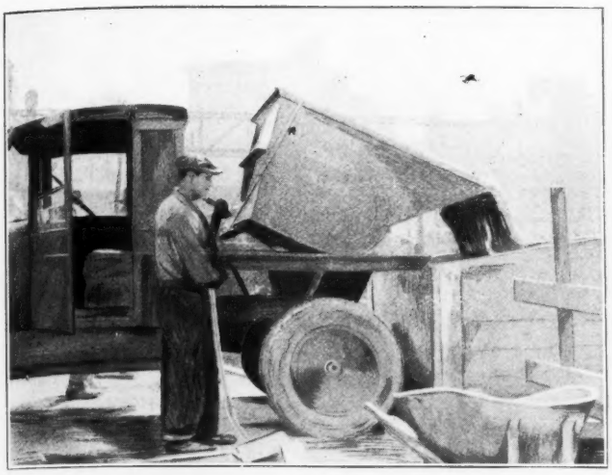
any job. In transit, open trucks should be covered with a tarpaulin to protect the concrete from the weather and to assist in conserving the heat. Even during the most severe weather, only a small amount of heat is lost by radiation from the truck.

Transporting the Mix

Possibly no single type of equipment has made its appearance on the market so rapidly or in such



Hopper Cars Being Filled at Central Mixing Plant To be Hauled by Whitcomb Locomotive



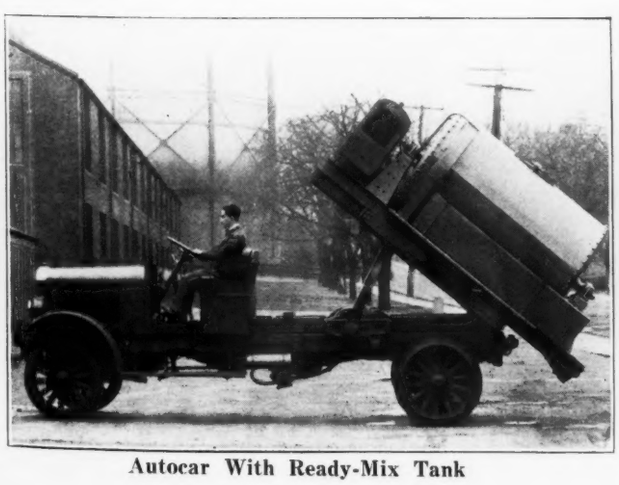
Easton Body Dumping Ready-Mixed Concrete

relatively large numbers for a new product as special bodies for concrete haulage. In the present stage of development, they are available in two distinct designs, the truck mixer body and the ready-mixed concrete body, and combinations.

The purpose of the ready-mixed concrete body is to prevent segregation of the concrete which has been mixed at a central plant and is being transported to the job. These bodies are of various designs and utilize such devices as revolving drums, paddles for preventing segregation or a tumbling action. Ready-mixed concrete is also loaded in hopper bottom cars and ordinary trucks and transported by locomotives for a considerable distance.

The principle of the truck-mixer body is based upon the practice of charging the aggregate and cement, which is properly proportioned, dry into the truck body; the water is accurately measured into a tank that is carried on the truck. Either en route or after arriving at the job, the water is turned into the body and the concrete is mixed, usually by a connection with motive power furnished by the truck.

The revolving bodies for hauling ready-mixed concrete developed by the Clinton Motors Corporation are claimed to be scientifically correct in addition to strength and simplicity among their dominant features.



Autocar With Ready-Mix Tank

The Clinton Concrete Carrier, "The Final Link in Contractor Service"

The body consists of a cylindrical steel tank, the inside walls and ends of which are perfectly smooth with no obstructions of any kind. Loading is accomplished through a door in the top large enough to take the full mixer charge without spillage. After loading, the tank is hermetically sealed and slowly revolved until ready for discharge. This rolling action eliminates all segregation and causes more complete hydration. The body is discharged from the rear by elevating its front end. The discharge door opens by means of a 30-in. ratchet extension handle to a full opening of 10 by 23 in.

The body is supported at either end by large trunnion shafts revolving in self-aligning roller bearings. The body is revolved through a cut steel pinion engaging with a gear attached to the outer circumference of the tank at the front end. Power for revolving the tank is furnished by an independent two-cylinder, 8-hp. engine, operating at a predetermined speed. The power is transmitted by a sprocket on the gear shaft through chain drive to a corresponding sprocket located on the pinion shaft.

The 2-yd. capacity body is available for light, fast delivery—for example, on new subgrades or

This Three-Way Differential Dump Truck Is Used By the City of Atlanta for Hauling Ready-Mixed Concrete

A 4½-Yd. Transit Mixer Body Mounted on a Mack Truck

where the going is too soft for heavy trucks. This unit is equipped with pneumatic tires. The 3-yd. units such as used on the big jobs are equipped with solid tires, although large pneumatic tires are available if necessary.

A truck-mixer body developed by the Transit Mixers, Inc., and known as the Paris transit mixer utilizes a revolving drum and a blade arrangement which is claimed to produce a perfect homogeneous mix. This is claimed to be assisted by the loading method utilized, which consists in revolving the drum during the loading of the aggregate, thus assuring complete dry mixing. This is made possible by a special transmission which allows revolving the drum in either direction and at all positions, whether raised or lowered.

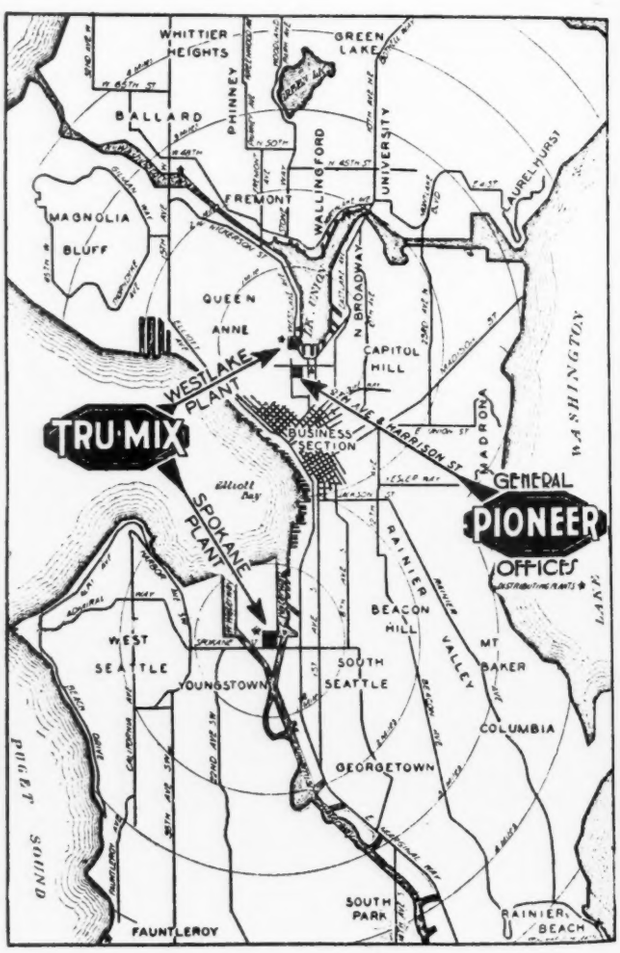
A tank of dual compartment type is used for the main and reserve water supply. It is said that the water is distributed quickly, accurately and dependably throughout the aggregate. The revolving of the drum, during discharge, is claimed to give either instantaneous or controlled discharge with no separation of aggregate. Mixing can be accomplished either in transit or at the job. The control discharge feature makes it possible to pour concrete into forms, buggies or hoppers direct from the mixer. The body is operated and hoisted to dump by means of the truck's motive power. A feature of this truck-mixer installation is that each truck carries a length of chute which can be pivoted at the rear of the chassis and swung from an A-frame, permitting it to discharge at the rear or on either side.

This mixer has freed the contractor from the investment, time and labor involved in erecting and operating mixers, hauling, storing and handling aggregates and installing water connections. He is not compelled to erect mixing and storage structures that obstruct traffic and add further items of overhead and expense. He is freed from the uncertainty of costs, as under this system, he knows the actual cost per yard delivered, in advance.

Briefly, the advantages claimed for this mixer are: Perfect concrete delivered ready to place; distance handicaps overcome; concrete mixed thoroughly in transit or at the job; rapid loading and control discharge; operations speeded up; less power for operation; lighter weight; any size aggregates and stiff or wet mix handled; high payload ratio; revolves while discharging; and three sizes: two to four and a half yards wet concrete.

The Blaw-Knox Company is manufacturing a ready-mixed concrete body invented by Graham Brothers, contractors and ready-mixed concrete dealers. This is known as an agitator body wherein the mixed concrete is agitated by revolving blades which are geared to the truck transmission. It is claimed that this agitation eliminates segregation and improves the quality of the concrete. Wet or dry mixes are handled with equal facility and the agitation not only stirs in the circular cross section of the concrete mass, but keeps it in constant agitation along the length of the body.

The agitating blades are set within 3/16 in. of the body itself. It is claimed that a patented design of the tooth which releases the coarse aggregate eliminates any binding or wedging of aggregate between the blades and the body. The agitat-



Unique Card of Pioneer Sand and Gravel Company, Seattle, Washington. On Reverse Side Is Price List

A Hug Truck, Equipped with a St. Paul Hoist, Dumping Concrete

ing mechanism, which is connected to the truck transmission and is said to require only 4 hp. to operate, is mounted on a center shaft supported on three fixed bearings, the center bearing being of split design for easy adjustment. The mechanism is automatically disconnected from the truck body when hoisting to dump and is automatically reconnected when the body is lowered. The agitators make 4 rpm. with the speed of the engine at 20 miles per hour.

These agitator bodies can be easily attached to any type or capacity of motor truck. In addition, any standard make of body hoist may be used. The company recommends the use of a high-lift hoist inasmuch as it provides sufficient vertical clearance to dump the load into a storage hopper on the job, thus releasing the truck immediately and saving time. Also the high-lift hoist permits longer chuting.

If it is desired to use the truck for general haulage purposes, this may be done without removing the agitating mechanism, or this mechanism can be removed in about twenty minutes by taking off sixteen bolts. Another important feature of the body is that the discharge of concrete can be controlled by means of a rack-and-pinion gate.

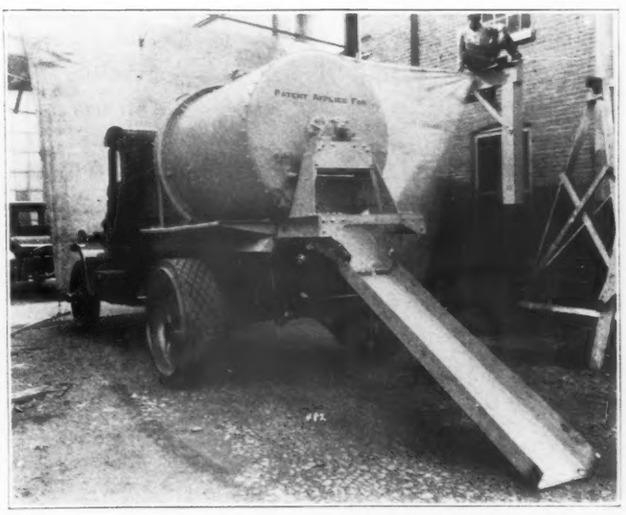
Blaw-Knox Agitator Truck Body

The elimination of the expense and dead weight of a hoist is one of the advantages claimed for the Jaeger agitate or mix-in-transit body developed by the Truck Mixer Company. The body consists of a permanently cradled drum which rotates in one direction to charge and reverses rotation to discharge. The bodies are said to be suitable both for mixing en route or for hauling ready-mixed concrete, and the bodies are suitable for hauling gravel, sand or other bulk materials.

LeBlond-Schacht Truck Dumping at Job

When installing the bodies, they are clamped to the truck chassis, no drilled holes being necessary except on one or two makes of trucks. The standard automotive gear reductions are easily connected with the body. A feature of the design of the body is that the load is balanced and carried well forward of the rear axle and between the tires with a low center of gravity.

In charging ready-mixed concrete or ordinary bulk materials the body can be loaded through a manhole fitted with a removable watertight door. For truck-mixed concrete, the load of dry materials is charged from the end and the screw action of the blades carries the load forward into the mixing chamber. The high screw blades in the cone prevent the load coming out while mixing en route.



The R. M. C. Delivery Truck

A Harrisburg Oscillating Drum Mounted on a 5-ton Mack Truck

The discharge action is of the screw type and discharge is accomplished by throwing the reverse lever. The manufacturers claim a dumping time of from 18 to 40 seconds depending on the size of the load and the consistency of the mix.

The Portland Concrete Machines Company has designed and is introducing a new R. M. C. delivery body for handling ready-mixed concrete, which has a number of new features. The tank is designed to be installed on any standard truck chassis of sufficient length and load capacity. It is a complete body unit which can be used interchangeably with other bodies, and may be mounted on a new chassis or on one already in service.

Concrete is loaded into the top of the tank and discharged through a generous door at the rear and bottom. The concrete is hermetically sealed in the tank during delivery, and completely protected against weather conditions, stiffening or hardening. This is accomplished by rotating the tank at a speed of 3 to 9 rpm. through adjustment of a special engine governor. This rotation is controlled by a separate power plant attached to the tank at the front end so that rotation is independent of the truck motor.

The interior of the tank is provided with vanes set longitudinally and offset from the shell. These vanes direct the flow of material to the front end of the tank, and, together with the rotation, keep the mass in a state of even consistency. By this means, it is claimed that concrete may be delivered two or three hours away from the mixing plant without segregation, loss of strength or change in workability. It is neither an agitator nor a mix-in-transit, but a delivery body designed to deliver specified concrete in the exact condition in which it was made at the mixing plant.

The truck mixer for manufacturing Trukmixd concrete, developed by the Barrymore Corporation is described as a combination open-top dump body and concrete mixer. It is built to fit the chassis of any standard motor truck and is made in three different sizes. The water is carried in tanks along the sides of the body and mixing is accomplished by means of curved spade-like blades so spaced and overlapped, as to cause a simultaneous triple action of lifting and spreading the materials around the shaft to which the blades are attached, rotating and churning the materials from end to center and back, and surging up volcanically. An important feature claimed by the manufacturer is that aggregates are transported to the job in a dry condition, premixed dry for about one minute and when the specified water is added, a further mix of two minutes is accorded the mass. Such a process is said to result in a complete application of the cement paste to all parts of the aggregates. Power is furnished from the truck engine to a set of gears, designed to allow the average engine to handle the mixing with ease.

It is claimed that the open top permits the only quick, simple and easy way to load any body by gravity from the regular batchers. Another advantage claimed is that cleaning is easily accomplished at the end of each day by turning a hose into the body and that the open body is readily available to stone and sand. Discharging is controlled through a large swinging tail gate or a smaller adjustable strike-off gate. St. Paul Hoist equipment was chosen because of the dumping angle of 55 degrees which is attained and is claimed to be the ideal dumping angle for concrete work.

(To be continued)

The Barrymore Mixing Tank

Portland Cement Association Holds Its 1929 Spring Meeting

THE annual spring meeting of the Portland Cement Association was held this year at the Biltmore Hotel, New York City, May 20, 21 and 22.

The first day was devoted to committee meetings and a meeting of the board of directors. The following are the committees and their respective chairmen:

Papers for mill sessions—John J. Porter.
Conservation—E. Posselt.
Transportation—F. C. Taylor.
Accident prevention and insurance—J. B. John.
Accounting—Charles F. Conn.
Advertising—D. H. MacFarland.
Technical Problems—W. H. Klein.
Elimination of Waste in Selling—Blaine S. Smith.
Packages—E. V. Aldredge.

These meetings were open to representatives of member companies only. A session was held by the special committee on cement specifications.

On Tuesday the session was open to invited guests. Reports were made by the committees on accident prevention and insurance, and on conservation. Excerpts from the first of their reports, presented by the chairman, J. B. John follow.

Frank H. Smith
President of the Portland Cement Association

Tentative Report of the Committee On Accident Prevention and Insurance

"Accident frequency was again reduced substantially during 1928. Revised figures indicate that there were 913 lost time accidents in the 136 mills which provided complete data, as compared with 1,379 in the 136 mills reporting in 1927, a decrease of 33.8 per cent. To this quite satisfactory reduction may be added a further decrease of 46 per cent during the first quarter of 1929 as compared with the first quarter of 1928.

"On May 1, 1928 there were 57 mills with clear records from January 1, of which number seventeen eventually succeeded in winning trophies. On April 24, 1929 there were 85 mills free from accident since January 1, so the prospects for an even larger group of trophy winners for 1929 is very encouraging. Accidents five years ago, in 1924, averaged 261 per month for the entire group, while in 1928 they averaged 88 per month and for the first three months of 1929 the average was only 51.

"In contrast with the foregoing there have been indications during the past ten months that the severity of our accidents is on the increase. We are experiencing a surprising reduction of commonplace, short lay-up injuries on one hand, and actual increase of injuries of the graver sort, on the other. These indications seem to be growing more pronounced. Fatalities and permanent disabilities increased in 1928 and there were more days lost per 100,000 man hours worked than in 1927. Taking these facts into account it is evident that the character of our accidents is changing. In 1926 there was one fatal for every 47 lost time accidents; in 1927 one fatal for every 45 lost time accidents. During the first quarter of 1929 there was one fatal for every 19 lost time accidents. Our members should fully appreciate the seriousness of this trend.

"A few months ago, when indications of increasing severity began to appear, the chairman appointed a sub-committee on fatal accidents which is now at work. While the facilities at the disposal of the committee have not permitted as complete a study of the situation as we feel should be made, the evidence now in hand would indicate that past efforts have succeeded in raising the general level of intelligence and safety appreciation only far enough to conquer the less dangerous types of accident. There is yet a tremendous task ahead of us to educate the workmen away from accidents which lead to the more severe injuries.

John B. John
Chairman, Committee on Accident Prevention and Insurance, Who Made the Report

"New demands have been placed upon our operating organizations by heavy programs of construction and rebuilding, new and larger machinery and the necessity for producing more cement per man-hour, forced on our industry as an economic measure. It is impossible to side-step hazards of this kind. They go along with the present trend and probably represent what may be expected in the future. Therefore, the solution of our difficulties lies largely in improving the personnel of the mills. Those things which will develop general intelligence, broaden men's viewpoints and stimulate interest in their work and in their own progress, must be depended on in our efforts to reduce the severity as well as the frequency of our accidents.

"Since the annual meeting eight regional safety meetings have been held at which were assembled groups ranging from 75 to 200 operating men each. About sixty papers were prepared by mill men for use on these programs and it is expected that at least 150 papers on safety subjects will be contributed during the year. Seven more meetings of the same character remain to be held, the probable combined attendance at regional meetings this year being around 2,000 men. So far as possible the Committee on Accident Prevention will also be represented at the seventeen trophy dedication ceremonies at the mills which operated without accident during 1928.

"It is only fair to mention the excellent record of the Lone Star Cement Company, Virginia, at Norfolk, which completed the year without loss of time from accident, but which had the misfortune of losing the trophy award through a slight disability to a workman's eye. This committee looks forward hopefully to an opportunity to award a 1929 trophy for this mill. Seventeen other mills suffered but one accident each.

"Three had no recordable accidents in 1928. Three had one accident each, totaling 357 days loss of time. Two had two accidents each, totaling 502 days loss of time. Two had four accidents each, totaling 452 days loss of time. Two had five accidents each, totaling 298 days loss of time. One had eight accidents with 54 days loss of time.

"All of these mills except one are above the average of 6.7 accidents per mill for the entire Association group in 1928. The days lost per 100,000 man-hours worked by the above group was 20.6 as compared with 32.6 for the entire number reporting to the Association.

"As a result of arrangements made at the annual meeting, about three-quarters of all of the operating mills within our membership in the United States have been engaged in a program of first aid training during the last few months. A number of mills which up to January 1 had no mill employes trained as emergency first aid operators, now have every permanent employe so trained and the possessor of a Bureau of Mines certificate. Last year the mills with exhibition teams could be counted on the fingers. By June 1, it is expected that between 400 and 500 reasonably good teams will be ready. Great credit for these results must be accorded to the U. S. Bureau of Mines, which has assigned some 25 instructors and a large proportion of its administrative staff to this work since February 1.

"On June 1 the mills of our membership enter the annual no-accident campaign better prepared and more determined than ever. Judging by the remarkable reduction of accidents during the months elapsed since our last campaign, we have great faith in the ability of the mills to finish June 1929 without an accident.

"The Committee on Accident Prevention again expresses its appreciation to the membership of the Association for their splendid cooperation, which is recognized as the outstanding reason for the good results attained."

Symposium on Stellite

At one session the following papers were read:

Steward H. Dewson, chief engineer, Pennsylvania-Dixie Cement Corporation, Nazareth, Pennsylvania—Stellite and Its Applications in Our Four Northern Plants.

R. L. Slocum, assistant superintendent, Universal Portland Cement Company, Pittsburgh,

Pennsylvania—Hard Surfacing of Machine Parts Subject to Abrasion in Cement Mills.

H. F. Tyler, first vice-president, Dewey Portland Cement Company, Davenport, Iowa—Uses and Behaviors of Stellite and Stoodite at the Plants of the Dewey Portland Cement Company.

L. A. Eisenhard, chemist, Lawrence Portland Cement Company, Northampton, Pennsylvania—Detailed Applications of Stellite. The following excerpts are from this last paper.

Fuller-Kinyon Pump Conveying Screws

The cold rolled steel shafts we were using lasted only about two weeks, after which period the shaft would be beyond repair for further use in the pump. Our pumping condition is severe due to a long distance, many bends, many risers (not in one lift) and many valves. Since covering with stellite it has not been necessary to discard any shafts during the past three years. Nearly 7,000,000 barrels of portland cement were conveyed by the pumps during this period.

Conveyor Screw Flights

Steel and chilled-iron flights were formerly used. Their life was very short, averaging respectively from three to five days. Steel flights, covered with stellite, have rendered a service of about 25 to 1 over the life of any other metal tried in this operation.

Conveyor Gudgeons in Screw Conveyors

We are using cold-rolled steel shafting to handle pulverized clinker from Bradley Hercules mills to tube-mill feed-bins and apply a coating of stellite over that portion which revolves in the hanger bearings. We consume about one pound stellite in the treatment of a 3 7/16-inch gudgeon. The bearings are made of chilled iron and are not lubricated. The gudgeon thus treated with stellite renders a service of 20 to 1 over that of plain cold-rolled steel shafting, and is superior to any other metal we have tried thus far. Further, by stelliting the gudgeon, the life of the screw is found to be about 2 to 1 over that of our previous experience. The flights on these screws are not stellited.

Shafts in Drag-Chain Rollers

The rollers, shafts and bearings supporting the returning chain which conveys hot clinker from the rotary kilns are exposed to extreme heat and lubrication is impossible as babbitted bearings could not be used and brass was not satisfactory. Chilled-iron bearings were used with cold-rolled shafting for the roller. The life of these shafts was about four weeks. The ends of these shafts are now stellited and used with the chilled iron bearings. All that wears out now is the roller upon which the chain idles.

Drag Chain Links and Riding Blocks

The life of the drag chain used in hot line drag conveyors has been doubled by welding a few beads of stellite across the side bar of the link. The riding blocks are chilled iron and water cooled. By the application of a few beads of stellite across the top where the chain rides, we have extended the life of these blocks to about four times their previous length of service.

Bradley Hercules Mill Plows

On both raw material and clinker we find that the life of these plows by the application of stellite on the tips has been increased to three times that of chilled iron, or numerous other metals we have tried. Furthermore, these plows are retipped with stellite. We have purchased twenty-four plows during the last three years and are operating six units. During this period we have replaced the plows an average of eleven times in each unit and the plows need not yet be discarded.

Steel Dies for Clinker Grinding

The life of a steel die formerly averaged 350 hours. By stelliting one of these steel dies on the wearing surface and extending the stellite over the top and bottom edges, we procured an average of 5,000 hours continuous service, after which time the die was taken out of the mill and resurfaced with stellite where worn.

F. R. McMillan, director of research for the P. C. A. spoke for the committee on technical problems with the subject, Performance—Ultimate Test for Concrete Quality.

After luncheon the award of trophies was made to the seventeen teams who won in the Portland Cement Association's 1928 safety contest. These winners were:

Alpha Portland Cement Co., Bellevue, Mich.
Alpha Portland Cement Co., Ironton, Ohio.
Alpha Portland Cement Co., Manheim, W. Va.
Canada Cement Co., Ltd., Exshaw, Alta.
Consolidated Cement Corp., Mildred, Kans.
Cowell Portland Cement Co., Cowell, Calif.
Lehigh Portland Cement Co., Bath, Pa.
Lehigh Portland Cement Co., Fogelsville, Pa.
Lehigh Portland Cement Co., Iola, Kans.
Lehigh Portland Cement Co., Sandts Eddy, Pa.
Lehigh Portland Cement Co., Ormrod, Pa.
Marquette Cement Mfg. Co., Cape Girardeau, Mo.
Oregon Portland Cement Co., Oswego, Oregon.
Pennsylvania-Dixie Cement Corp., Kingsport, Tenn.
Standard Portland Cement Co., Painesville, Ohio.
Trinity Portland Cement Co., Dallas, Texas.
Wolverine Portland Cement Co., Quincy, Mich.

At the Wednesday forenoon sessions, a short memorial service was conducted, and the regular business meeting followed. President Frank H. Smith made an impressive address, while E. St. Elmo Lewis of National Services, Incorporated, Detroit, Michigan, spoke upon Sensible Selling.

A formal dinner at 7 in the evening concluded this meeting.

Production of Magnesite In 1928

The production of crude magnesite in the United States in 1928 was 127,190 short tons, valued at $1,098,470, according to statistics compiled by the United States Bureau of Mines, Department of Commerce. Four operators working 4 mines, one each in San Benito, Santa Clara, Stanislaus, and Tulare counties, in California, produced 41,300 tons of crude magnesite, valued at $454,300. All of the output in Washington was from the mines of the Northwest Magnesite Co., which produced caustic calcined and dead-burned magnesite at Chewelah. Two of its 6 furnaces were operated most of the year.

Magnesite supply in the United States, 1922-1928, expressed as crude magnesite, in short tons

Year	Domestic	Imported	Total[1]
1922	55,790	217,861	273,651
1923	147,250	151,092	298,342
1924	120,100	148,700	268,800
1925	120,660	142,283	262,943
1926	133,500	196,318	329,818
1927	121,490	149,126	270,616
1928	127,190	157,492	284,682

[1] **Prior to 1924 a factor of 2 tons of crude to 1 ton of calcined was used in expressing imports as crude magnesite. Since 1924 the factors used are 2 to 1 for imports from Italy and 2½ to 1 for other imports.**

Sales of magnesite of domestic origin in 1928 were 620 tons crude, 9,570 tons of caustic calcined (a decrease of 31 per cent as compared with 1927), and 48,980 tons of dead-burned (an increase of 22 per cent as compared with 1927), having a total value of $1,536,810.

Imports of magnesite in 1928, according to the Bureau of Foreign and Domestic Commerce, were 842 short tons crude, valued at $7,593, of which 90 per cent came from Greece; 5,395 tons of caustic calcined, valued at $130,890, of which 62 per cent came from India and 36 per cent from the Netherlands; and 57,265 tons of dead-burned, valued at $836,386, of which 99 per cent was from Austria and Czechoslovakia. Corresponding figures for 1927 are 891 tons of crude, valued at $9,790; 9,463 tons of caustic calcined, valued at $229,592; and 49,873 tons of dead-burned, valued at $727,881.

Domestic supply of magnesite in various forms in 1928

Class	Sales (domestic) Short tons	Value (f.o.b. mine)	(General Imports) imports a/ Short tons	Declared value	Total Short tons	Total Value
Crude	620	$ 5,690	842	$ 7,593	1,462	$ 13,283
Caustic	9,570	304,500	5,395	130,890	14,965	435,390
Dead-burned	48,980	1,226,620	57,265	836,386	106,245	2,063,006

a Subject to revision.

Prevailing Prices

According to the *Engineering and Mining Journal*, quotations on crude magnesite during 1928 were $14 a ton from January to May 5, when the price was reduced to $11 a ton. California Grade A, caustic calcined, ground 80 per cent through 200-mesh, was quoted at $40 to $43 a ton during the year and Grade B at $37.50 to $40 a ton. Dead-burned was quoted f. o. b. California mines at $30 to $32 in January and February, $29 in March and April, $28 from May to September 8, when the price rose to $29 a ton for the remainder of the year. Quotations, f.o.b. eastern seaboard, were $40 a ton throughout the year.

Domestic producers reported sales of crude magnesite at from $7.50 to $11 a ton f.o.b. shipping point of mine, and the average price for all magnesite sold crude was $9.18 a ton. Producers of caustic calcined magnesite in the United States reported sales at from $22 to $35 a ton, the average price for the total sales of domestic being $31.82 a ton f.o.b. shipping point. Domestic dead-burned magnesite was sold at from $22 to $44 a ton, the average price for the entire output being $25.04 a ton f.o.b. shipping point.

Will Recover and Market Gravel From Russian River

The Russian River Improvement Company of Jenner, California, has secured rights to remove gravel from more than 1,334 acres of land along Russian river. The company is constructing a small jetty at the mouth of the river to provide channel for entrance of steam vessels and barges to handle the gravel.

The Atlas Portland Cement Company is erecting a new plant at Waco, Texas. Eight storage silos, each 80 feet high, will be a prominent part of the plant.

New Corporations

Searles Lake Potash Corp., c/o Frank H. Hitchcock, attorney, 30 E. 58th St., New York City. 100,000 shares.

Alaska Asbestos, Inc., 403 Ridge Bldg., Kansas City, Mo. H. O. Sheidley, Sec.-Treas. 4000 shares com. To produce asbestos talc, graphite.

Garrett-Rubin Mineral Co., Sylvan, N. C. $20,000. R. U. Garrett, R. U. Garrett, Jr., Joseph J. Hooker, all of Sylvan. Formed by purchasers of Rubin Mica Co.

Texas Construction Material Co., Post Dispatch Bldg., Houston, Tex. $600,000. W. H. Gemmer, Pres.; W. D. Sampson, V. P. & Gen. Mgr.; Phil Gemmer, Sec.-Treas. Formed by merger of Gemmer & Tanner, of Houston, Columbus, Eagle Lake, and Glidden, Tex.; and Beaumont Bldg. Material Co., Beaumont, Tex.

Young Sand & Gravel Co., Cleveland, O. $5,000.

Bagnell Sand & Gravel Co., Bagnell, Mo. 500 shares n.p.v. Jess Perkins, Gen. Mgr., Bagnell; Burrell McInerney, Albert Tate, Dallas, Tex. To produce sand and gravel.

Eastern Ohio Sand & Supply Co., Steubenville, O. $250,000. M. H. Francis, Carl H. Smith, Harry B. Chalfant.

Angelus White Portland Cement Co., c/o Palmer & Mull, attorneys, Van Nuys Bldg., 7th & Spring Sts., Los Angeles, Calif. Frank H. Read, 112 W. 9th St., Los Angeles; and Edward Duryee, Los Angeles, are promoters.

Key Largo Travertine Co., Miami, Fla. L. M. Dixon, B. H. McCann, O. L. McCord, F. E. Sweeting.

West Side Sand & Gravel Co., R. L. Chapin, Sec., 188 Michigan Ave. E., Battle Creek, Mich. $10,000. James W. Pritchard, Ernest C. Leach, Kalamazoo, Mich.

Bagot Sand Co., Ltd., 20 St. James St. East, Montreal, Que., Can. $11,000. P. E. Mongeau, P. E. Matte, J. A. Joncas, W. Brosseau.

East Side Sand & Gravel Co., Bellevue, Wash. $25,000. H. A. Bechtel, Charles A. Claringbould.

Scarlett & Earl, Inc., 253 Horton Ave., Lansing, Mich. Archie J. Earl, Evert J. Scarlett, Joe C. Foster, all of Lansing. To produce sand and gravel.

Santa Maria Rock & Gravel Co., Santa Maria, Calif. E. D. Rubel, Edgar Craig, C. W. G. Murdock, of Bicknell, and K. B. Holeman.

Granite Sand & Gravel Co., Indianapolis, Ind. Homer Rodeheaver, Pres.; J. N. Rodeheaver, V. P. & Treas.; C. W. Stevens, Sec. & Gen. Mgr. Bought Lick Creek Sand & Gravel Co., Indianapolis, Ind.

Durex Abrasives Corp., Montclair, N. J. 20,000 shares com.

Henry N. Battjes, secretary of the Grand Rapids Gravel Company, was elected president of the Michigan Sand and Gravel Producers Association at the annual meeting held in Detroit May 20, 1929.

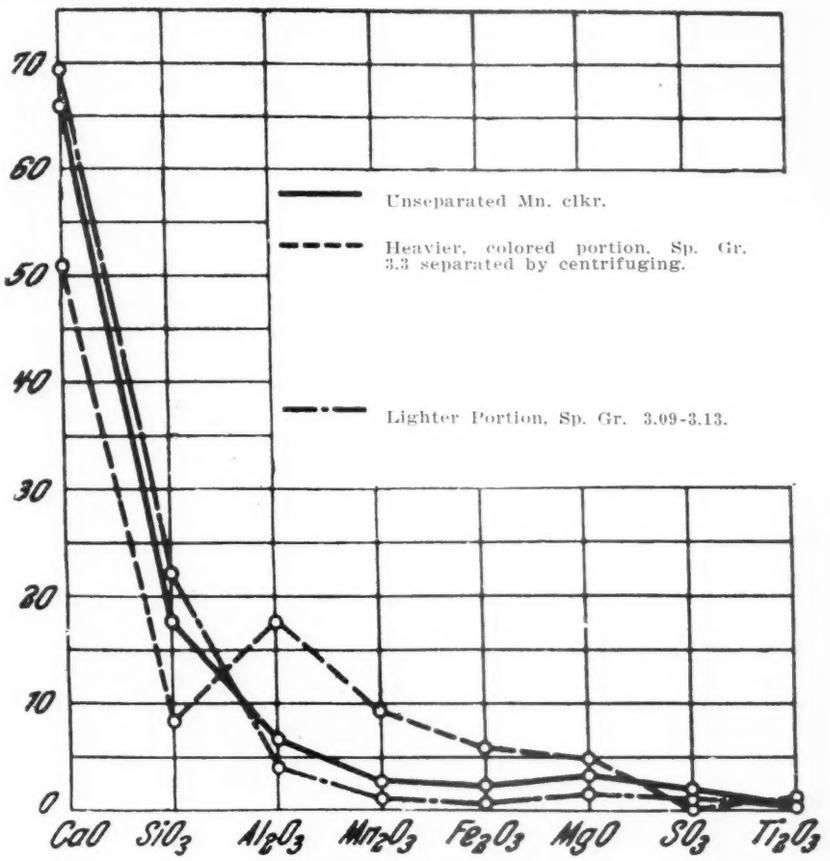
PIT AND QUARRY FOREIGN DIGEST

Silica Bricks

Silica exists in alpha and beta state in three crystalline phases: quartz, crystoballite and tridymite. If quartz or quartsite is heated to a temperature sufficiently elevated (1,450-1,550 deg. C.) for prolonged intervals, it changes first to crystoballite and finally into tridymite, and the degree of transformation depends upon the temperature, the time of heating, and the presence of impurities which act as a flux. Commercial silica bricks for metailurgical use rarely contain more than 65-75 per cent tridymite, and the transformation of the residual quartz and crystoballite takes place only after use at high temperatures in the furnace. During this transformation period, the bricks are in a state of inferior strength, but when this period is complete, they recover their original strength. But the transformation of quartz from the alpha to the beta stage is accompanied by volume changes which expose the bricks to deterioration if the change is allowed to take place too rapidly. Presence of small amounts of impurities accelerate the final transformation. With 2 per cent of lime at 1,400 deg. C., all the quartz is transformed into tridymite in a few hours. Iron oxide also acts as a catalyst, but there is danger in using an excess of this material, as it is likely to be reduced by the combustion gases to form an iron carbide which reoxidizing in use in the furnace to iron oxide, will expand sufficiently to damage the bricks. Correct grain size of the quartz before the transformation plays an important role. The smaller the particle size, the more rapid and more complete the transformation.—Anon. (*Le Ciment*, April, 1929.)

Manganese in Cement Clinker

Cement clinker, being made from naturally occurring materials, has been found to contain small amounts of manganese. In ordinary portland cement this amount varies from 0.04 to 0.18 per cent. The clinker from iron portland cement was found to contain quantities varying from 0.11 to 2.6 per cent manganese dioxide. This manganese is actually combined with the clinker constituents and is not to be confused with the manganese dioxide sometimes added mechanically to light cement clinker. Blast furnace slag, added with advantage to portland cement often contains as high as 16 per cent manganese. The properties of these manganese containing cements led to an investigation of cement clinker with percentages of this metal varying from 1 to 7 per cent. Percentages greater than the latter figure would not be interesting commercially. Portland cements with the high manganese figure of 3 per cent, if high also in iron have a characteristic rose color. If iron is absent, the color is dark or light gray. Manganese rich cements show a markedly higher strength at early setting stages. This is true not only for manganese slags used as the siliceous component, but for the cases where MnO_2 is added to the raw slip before sintering. A cement made from 65 per cent limestone, 32.5 per cent slag and 2.5 per cent MnO_2 resulted in a clinker containing 62.5 per cent lime, 19.0 per cent silica, 7.7 per cent alumina, 2.4 per cent iron oxide and 4.7 per cent manganous oxide (Mn_2O_3). Its setting began in 20 minutes and was completed in 2 hours, 25 minutes. After 2 days hardening its tensile strength was 305 lb. per. sq. in. and its compressive strength 2,600 lb. per sq. in. One feature of these cements is the fact that they may be partially separated into portions containing more and less manganese by a centrifuging action. Figure I shows the percentage composition of an unseparated clinker and the composition of two separated portions of the same cement.—A. Guttmann and F. Gille (*Zement*, April 18, 1929).



Humus in Sand

By the addition of the proper amount of alkali to unpurified sand containing organic impurities, a 28 day strength of from 90 to 100 per cent of the values observed with standard sand may be obtained. The humus, probably oxidizes during hardening and combines with the free lime added for this purpose to form organic lime salts which are without deleterious effect upon the concrete or mortar. The alkalinity of the cements was determined by shaking the cement powder with varying amounts of water and titrating the filtrate with standard acid. It was found that an alkalinity corresponding to 90 to 100 cc.N/10 hydrochloric acid when determined in this manner afforded the maximum protection against impurities in the sand.—W. de Sharengrad. (*Zement*, March 7, 1929.)

Retarding Cement Setting

Seven years' experience with gypsums rich in anhydrite as retarders in cement setting lead the author to the same conclusion reached by Killig and recently reported. If 2 per cent of gypsum containing anhydrite, with composition B (see below) is ground with cement, a rapid setting, slow hardening mortar results of low strength. But if a gypsum of composition A, is used, then normal setting and satisfactory strengths result. Anhydrite is an unfavorable component, therefore, of cement:

Gypsum A	Per Cent.	Gypsum B	Per Cent
H_2O	= 20.50	H_2O	= 9.97
Insoluble	= 0.09	CO_2	= 0.46
SiO_2	= 0.21	Insoluble	= ....
Al_2O_3	= 0.09	Silicate	= 0.13
Fe_2O_3	= 0.03	CaO	= 36.95
CaO	= 32.53	MgO	= 0.21
MgO	=	SO_3	= 52.25
SO_3	= 46.54	Silicate	= 0.13
Silicate	= 0.42	$CaSO_4$ $2H_2O$	= 47.63
$CaSO_4$. $2H_2O$	= 97.94	Anhydrite	= 51.25
Anhydrite	= 1.63	Dolomite	= 0.96

In this connection it must be pointed out that in the fine grinding of cement high temperatures are sometimes obtained in the cement powder, high enough in many cases to dehydrate the gypsum and form anhydrite, depending of course, on the initial moisture content of the clinker. Such overheating is deleterious and is to be avoided if the cement is not to suffer unnecessarily in properties. A. Dahlgren (*Zement*, March 28, 1929).

Setting of Plaster of Paris

The setting of Plaster of Paris is easily followed by thermal measurement. In the course of the setting, the product liberates heat in varying degree from the beginning to the end of the operation. The evolution of heat is due to the hydration of the plaster, whose particles swell because of the formation of a colloidal gel. This gel formation arrests the setting and heat liberation temporarily until the gel changes over to crystalline form, when the setting and heat evolution again take place. Accelerating and retarding catalysts were examined which affect the rate of setting. Among the accelerators may be mentioned chlorides and nitrates which increase the solubility of gypsum, a large number of organic salts, and silicates. Some of the retarding catalysts found were: lime, casein and tannin which act as protective colloids, alcohol, sugar, and certain citrates which decrease the solubility of gypsum; and phosphates and sulphates.—P. P. Budnikov (*Kolloid-Zeitung*, Vol. 44, P. 242).

Rotary Kilns and Pulverized Coal

A hopper receives the coal which is distributed, crushed, dried and injected. A few m. from the point of injection is the clinkerization zone where the temperature is about 1400-1500 degrees. The clinker falls into a cooler where it gives up its heat to the air used for combustion. In most cases the coal is dried to below 1 per cent moisture and then crushed in a ball or tube mill insufficiently ventilated. After being crushed the coal may pass through an air selector and it is then stocked in the feed hopper, the whole forming an individual piece of apparatus, a kind of condensed central pulverization plant. A fan is added to supply air for combustion. This air as well as that for the grinder comes from the clinker box at about 200-250 degrees. In this system power consumption is reduced, cost is less than in a central pulverizing station, the general working of the rotary furnace is not interrupted and poor coal and semi-lignite can be used. Chaleur, ind. *9*, 146-9 (1928). C. A.

Improving Cement Setting

Incrustations on cement are prevented and the settling properties are improved by the addition of substances, preferably soluble in water, such as ammonium carbonate, ammonium bicarbonate, boric acid, ammonium phosphate, urea or a slightly soluble or insoluble substance such as a salt of calcium which will neutralize the free lime to give insoluble compounds. For example, 5 per cent ammonium carbonate may be added. In cement washes the amount may be 25-50 per cent. The cement or grout may be colored with anthrajuinone dyes. —G. N. White (French Patent 644,-842).

Blast Furnace Cement

This cement is made by intimately mixing finely ground blast furnace slag (60-80 per cent), portland cement (5-25 per cent) and Lime (2-22 per cent). The setting of the cement is regulated by addition of gypsum, and the lime obtained in finely divided powdered condition by slaking and drying.—Soc. pour L'Exploitation des Procedes Petrus. (British Patent 305,170.)

Pulverized Coal in Rotary Kilns

A hopper receives the coal, which is distributed, crushed, dried and injected. The temperature of the sintering zone is 1400-1500 deg. C., and is a few yards from the point of injection. The clinker falls into a cooler where it gives up its heat to the air used for combustion. The coal is dried to less than 1 per cent of moisture and then crushed in ball or tube mills with air excluded. After crushing, the coal passes through an air sifter and then to the feed hopper, the whole forming a condensed pulverization plant. A fan supplies the air for combustion which enters the kiln at 200-250 deg. C. after passing through the clinker cooler. It is claimed for this system that the power consumption cost is reduced, where each kiln has its own pulverizing unit, the cost is less than using a central pulverizing plant, continuous operation of the kiln is not interrupted, and low grade coal, even semi-lignite may be used.—L. Morin. (Chaleur. Ind. *9*, 146-149 and C. A.)

Porous Concrete

Concrete is made porous by the addition of aluminum powder which has been activated by heating with mercuric chloride, so as to decompose water readily. The mixture is made thick enough to retain the sand and other aggregate in suspension, and the proportions are made such that the setting commences just as the gas generation reaches a maximum.—G. Richter (Berlin). (British Patent 305,415.)

New Process Aluminous Cement

A cement of the high alumina type is produced by subjecting a mixture of lime and bauxite or other highly aluminous material to the action of steam under pressure. After the initial reaction has occurred, the temperature is raised, but kept below the melting points. The proportions used are: one to two parts of lime to three parts of bauxite. The bauxite is ground before use and the lime may be either quick or hydrated. The steam treatment requires one hour at 100 pounds per square inch. The heat treatment is performed between 1000 and 1400 deg. C. With bauxite containing 50 per cent alumina and 20 per cent iron oxide, four hours heating at 1100 to 1150 degrees C. or two hours at 1150 to 1200 degrees C. is sufficient.—N. V. S. Knibbs (British Patent 303, 639).

Lime or Cement Kiln

The raw material is fed continuously into an annular vertical chamber surrounding another annular chamber containing the fuel. Below the fuel chamber is a grate and at the top of the central space is a steam boiler, the steam from which is sent under the grate. Gas burners using producer gas generated in the fuel chamber are provided to heat the fuel chamber internally and the outer rock or slip chamber externally.

INTIMATE NEWS OF MEN AND PLANTS

Improvements by Peerless-Egyptian

Improvements completed about April 1st at the plant of the Peerless-Egyptian Cement Company at Port Huron, Michigan, have increased its capacity about 10 per cent. The work included two buildings and two correction tanks, costing about $112,000.

Canadian Merger of Lime And Gypsum Interests

The Canada Gypsum and Alabaster Company has recently absorbed the following Ontario lime and stone companies: Beachville Lime and Stone Company, Beachville; Christee, Henderson and Company, Limited, whose head office is in Toronto, with lime plants at Hespeler, Kelso and Puslinch; D. Robertson Lime Company, Milton; Toronto Lime Company, Toronto and Limehouse; and Wellington Lime Company, Wellington. The company has thus become the largest producer of gypsum and gypsum products in Canada.

Central Sand and Gravel Company Is a New Merger

Announcement has been made of the consolidation of the Alpha Sand Company, Alpha Portland Cement Company (sand and gravel department), Gravois Material and Supply Company, Meramec Portland Cement and Material Company, and Ruprecht Sand and Material Company under the name of Central Sand and Gravel Company. The officers of the new company are George Ratermann, president; Wm. Ruprecht, vice-president; L. J. Siesener, secretary and treasurer. The business, good will, properties, plants, and yard of the above named companies have been acqquired by the new company.

Melvin H. Baker Is Made President of National Gypsum Company

At a recent special meeting of the board of directors, Melvin H. Baker was elected president of the National Gypsum Company to fill the vacancy caused by the death of J. F. Haggerty, who was the organizer and first president of this company. Mr. Baker has been closely associated with the affairs of the National Gypsum Company since its incorporation, being one of the founders of the company and directing its rapid advancement in production facilities as well as sales. In the three years that the company has been in operation, a general organization has been established throughout the United States and Canada.

"The National Gypsum Company was organized largely by Buffalo men acquainted with the gypsum industry, and consistently rapid progress has been made," stated Mr. Baker. "At a time when building activity is again increasing, the National Gypsum Company is well organized, both financially and in plant equipment, to meet the increasing demands of its dealers and to continue its expansion program. Rapid extensions have been made in the last two years in the development of a complete line of Gold Bond wall building materials and the company now operates large capacity mills at Clarence Center, New York; National City, Michigan; and Luckey, Ohio."

Atlas Portland Cement Company Increases Capitalization

Atlas Portland Cement stockholders have approved a plan to increase the authorized no par common to 1,500,000 shares from 1,000,000, and have permitted the directors to issue the additional stock at their discretion. It was also voted to reduce the authorized preferred to $26,300 from $2,500,000, by canceling shares which have been surrendered for exchange for common stock or cash.

Cement Association Appoints Engineer for Tennessee District

James E. Dunn has been appointed district engineer of the Portland Cement Association at Nashville, for the state of Tennessee, according to announcement by W. M. Kinney, general manager of the association. Mr. Dunn studied electrical engineering at Purdue University from 1916 to 1920 and graduated in civil engineering at Vanderbilt University in 1923. He was instrument man with the Kentucky department of state roads and highways in 1923 and plans engineer for the Tennessee department of highways and public works in 1924. He was a field engineer in the Nashville district of the Portland Cement Association in May, 1925, and for the past four months has been acting district engineer at that office.

Merger of Eastern Stone Companies

A merger of the Rock Cut Stone Company, which has headquarters in Syracuse, New York, with the General Crushed Stone Company of Easton, Pennsylvania, has been announced by W. L. Sporborg, president of the Rock Cut company.

The Rock Cut company controlled six operating properties and the General company ten, the latter being located in four different states. Mr. Sporborg made the following formal announcement of the merger: "An agreement has been executed between the Rock Cut Stone Company and the general Crushed Stone Company and the two companies will be merged under the name of General Crushed Stone Company as soon as the practical details can be arranged, which will probably require a month or so for accomplishment."

The operating properties owned by the Rock Cut corporation are located at Syracuse, Watertown, Lacona, Auburn, Ballina, and Madison, all in New York state. The properties of the General company are in the states of New York, Pennsylvania, Massachusetts and Maryland.

Western Pennsylvania Operators Organize

A new organization whose proposed function is to further the interests of the sand and gravel industry is known as the Western Pennsylvania Sand and Gravel Association, with headquarters in Pittsburgh, and the following charter applicants: W. A. Bliss, Beaver; Alex W. Dann, Glen Osborne; C. C. Patterson, Mt. Lebanon; Harry S. Davidson, Philander K. Rodgers, H. Clay Rodgers and George Vang, all of Pittsburgh.

International Cement Builds Warehouse in Washington, D. C.

International Cement Corporation is constructing a large reinforced concrete cement warehouse, with complete packing plant, at 34th Street, K Street, and Potomac river, Washington, District of Columbia. This will have a capacity of 60,000 barrels and comprises eight concrete silos, each 80 feet high, and elevating and conveying equipment.

The Bascom Quarries Company of Bascom, Ohio, has been absorbed by The France Company.

King Heads Department For Cowham Engineering Company

A. W. King, who for the past two years has been associated with the Structural and Technical Bureau of the Portland Cement Association, has resigned to become manager of the service department of the Cowham Engineering Company, effective May 16, 1929.

The Cowham Engineering Company has been actively engaged in the portland cement industry for the past twenty-five years and is now associated with the following companies in their management and operation: Consolidated Cement Corporation with mills at Cement City, Michigan, Mildred and Fredonia, Kansas; Florida Portland Cement Company with a mill at Tampa, Florida; Signal Mountain Portland Cement Company with a mill at Chattanooga, Tennessee. Realizing the invaluable service that can be rendered to its buyers and users of portland cement from the standpoint of engineering and technical aid, the Cowham Engineering Company has established a service department with Mr. King as its head.

Mr. King is particularly fitted to head such a department both from the standpoint of education and training. Prior to his connection with the Portland Cement Association, he was in charge of the Materials Testing Laboratory of the Bureau of Science, Manila, Philippine Islands, for 10 years, during which period he was appointed professor of civil engineering in the College of Engineering, University of the Philippines. Later he was connected with the Kalman Floor Company as sales engineer, and for two years was engaged in technical, research and promotion work for the Atlas Lumnite Cement Company. Mr. King is well known as the author of a number of scientific and technical papers which have had widespread circulation.

Reported Merger of North Carolina Feldspar Interests

A merger of feldspar milling companies that may include most of the plants now operating in North Carolina, and involving more than $1,000,000, is under consideration, according to the Department of Conservation and Development of that state.

According to the information, the plants of the North State Feldspar Company at Micaville and of Golding Sons at Spruce Pine, each one having a daily grinding capacity of 80 tons, are already in the consolidation.

Recent Improvements at the Quarry of Illinois Electric Company

The Illinois Electric Limestone Company operating a quarry and plant at Falling Springs, Illinois, a short distance southeast of St. Louis, Missouri, has made substantial improvements since the publication of the complete article about these operations in the PIT AND QUARRY issue of January 16 of this year. At that time some of the newer equipment had been received but had not been installed or, if installed, had not been put into commission.

The quarry now is served by two Marion shovels—a 1-cu. yd. steam shovel and a 2¼-cu. yd. electric—and a 25-ton McMyler locomotive crane. Approximately one-half mile of track has been constructed. Twelve 40-ton steel dump cars, hauled by four 20-ton locomotives, transport the rock to the plant. Here a rotary car-dumper discharges the carloads to the main crusher. A No. 4 Symons cone crusher has been added to the equipment. A system of belt conveyors has been installed directly beneath the storage bins in such a manner as to secure any desired mixture of stone for delivery into railroad car shipments. A track scale is another new piece of equipment.

New Gypsum Plant Nearing Completion at Tampa, Florida

United States Phosphoric Products Company, Tampa, Florida, has opened a new plant adjacent to its headquarters on Ruskin road, and has begun the manufacture of gypsum block. The gypsum plant and facilities, when complete, will represent an investment of $500,000. At present the plant is producing 400 tons daily. Machinery has been ordered which will give the plant capacity of 6,000 blocks daily. Machinery is being installed for manufacture of gypsum plaster and gypsum wallboard.

Will Produce Agricultural And Concrete Aggregate Limestone

The Hi-Rock Products Company of Chicago, Illinois, is equipping its plant at Marengo, Indiana, to produce 500 tons of agricultural limestone per day. Special machinery has been installed to crush the rock and reduce it to desired consistency. Vibrating screens, mechanically operated, remove dust to insure clean particles.

The company is equipped also to furnish crushed stone for roads and other construction work, and rock screenings for use in construction of walks. The company has orders on hand at the present time for 50,000 tons of these products, according to A. H. Mann, secretary-treasurer.

Coast Cement Manufacturers Have Bright Prospect

J. E. Jellick, manager of the Pacific Coast of offices of the Portland Cement Association, San Francisco, California, was a recent visitor to plants in the Northwest, and reported that the volume of highway construction assures an encouraging outlook for cement manufacturers in his region.

York Hill Builds New Crushing Plant

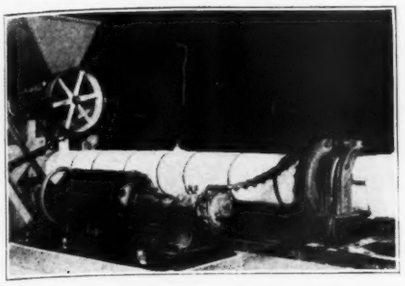
The York Hill Trap Rock Quarry Company of Meriden, Connecticut, has constructed a new crushing plant, at a cost of $30,000, to replace one that was badly damaged last October by a windstorm. The plant is in full operation.

Cleveland Quarries Company Combines Two Sandstone Interests

The officials and stockholders of The Cleveland Stone Company and The Ohio Quarries Company announce that on April 15, 1929, the interests of these companies were merged under the name of The Cleveland Quarries Company. This company has acquired also the stock of The Ohio Cut Stone company which will retain its corporate name and will retain its present offices in the Union Trust Building, Cleveland, Ohio.

This brings together two outstanding sandstone interests and makes The Cleveland Quarries Company the largest and strongest sandstone producer in the world. The principal officers of the former companies will serve as follows: Chairman of the board, W. A. C. Smith, formerly president of The Ohio Quarries Company; president, H. W. Caldwell, formerly president of The Cleveland Stone Company; executive vice-president, F. D. Kellogg, formerly vice-president and treasurer of The Ohio Quarries Company; vice-president and treasurer, J. R. Miller, formerly vice-president and treasurer of The Cleveland Stone Company. The directors are: H. W. Caldwell, H. T. Clark, W. G. Dietz, T. A. Giberson, F. D. Kellogg, J. H. Hord, J. R. Miller, L. A. Murfey, G. C. Worthington, D. T. Perry, W. A. C. Smith, Andrew Squire, and G. G. Wade.

NEWS OF EQUIPMENT MANUFACTURERS



JFS Variable Speed Reducer Driving a Dryer

Method of Variable Transmission

The ability to control the driving speed of process machinery contributes much to the ultimate success of any operation of this character. Cone pulleys, selective change gears and other similar methods have been frequently supplanted by the flexible and accurate JFS speed changer.

This transmission is placed between the motor or other power source and the machine to be driven. It is quiet, vibrationless and totally enclosed. By the simple turn of a wheel the speed may be increased or decreased over a wide range. There is no interruption in motion while the speed is being varied.

These transmissions are being manufactured to combine the two functions of speed reducer and variable speed transmission. There are six different standard sizes in capacities up to 25 hp.

All sizes are built in two types, one with a maximum reduction of 8 to 1, the other with a maximum reduction of 40 to 1. All these machines have a variable range of speed of 5 to 1.

Recently these variable reducer transmissions have been successfully installed in stone crushing plants for controlling the speed of feeders serving crushers. The illustration shows the method used in the plant of F. E. Schundler and Company of Joliet, Illinois.

More About the Eagle Swintek Screen Nozzle Ladder

The Eagle Iron Works is distributing a new illustrated 20-page bulletin which is principally concerned with the Swintek suction screen and nozzle ladder. The bulletin concludes by calling attention to the sand and gravel washers, sand classifiers, screens, elevators and other sand and gravel plant equipment.

The suction screen nozzle ladder was invented by Martin Swintek, who conceived the idea of a traveling chain type of screen nozzle ladder. The chain was expected to act as a traveling screen over the nozzle of the suction pipe line. On the chain, he mounted hook-link cutters for loosening the deposit. This was eminently successful as demonstrated by the testimonials of users prior to the purchase of all patent and manufacturing rights by the Eagle Iron Works.

Following the purchase of these rights, the company made a field survey of many of the ladders then in operation, with a view to improving the product. The machine finally evolved is designed along the lines of sound engineering practice. The structural steel frame of the ladder incorporates maximum strength and rigidity with minimum weight. The chain is of Amsco design developed by the American Manganese Steel Company. The entire machine is claimed to be practically and scientifically correct, built to withstand the digging load demands. Photostat copies of letters from customers are included in the bulletin.

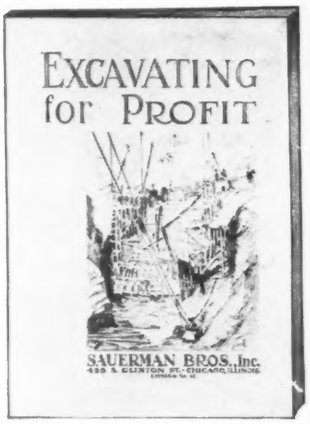
A New Crusher Folder

The Universal Crusher Company, which manufactures jaw crushers, hammer pulverizers, elevators, screens and auxiliary equipment, is distributing Folder 29, that describes very thoroughly the different makes of crushers, together with other equipment.

Universal crushers are said to be equipped with the latest improvements, behind which are more than twenty years of specialization in the manufacture of a machine capable of producing a uniform product of either fine or coarse material in commercial quantities at a low cost. The company offers a most complete line of crushers and has spared neither time nor expense in building them up to the highest standard of efficiency. The folder gives a general idea of its extensive line and illustrates a few of the twenty-two sizes.

Excavating for Profit

Sand and gravel plant operators and owners will find much information of definite interest to them in the 56-page booklet, entitled "Excavating for Profit," just published by Sauerman Brothers, Incorporated, engineers and manufacturers of slackline cableway excavators and power drag scrapers.



This booklet treats of the dessign, construction, principles of operation, and the varied uses of the Sauerman slackline cableway excavator in excavating and rehandling earth materials.

The excavation of sand and gravel ranks as the earliest use found for slackline cableway excavators; consequently, sand and gravel plant installations are given first place in the interesting section of the booklet where different types of equipment layouts are described and illustrated. A variety of installations are illustrated, showing machines with capacities ranging from 10 to 200 cubic yards per hour, digging in rivers, under-water pits, and deep, dry deposits.

Details in the design and construction of the component parts of the equipment are covered thoroughly with large scale illustrations of the many new, improved features of the equipment with which operators particularly are concerned, such as excavator bucket suited to all kinds of digging, roller-bearing sheave blocks, steel masts, 2-speed and 3-speed power units. The company will be glad to send a copy of the booklet to anybody in the sand and gravel industry who may request it.

New Folder on Screens

The Pioneer Gravel Equipment Manufacturing Company believes "It pays to give your gravel a fair shake," and is distributing a folder so inscribed on the outside cover. The bulletin deals especially with shaker and revolving screens, steel bins and hoppers.

Corporate Name Changed

The Canda Gayley Steel Corporation, recently incorporated to take over the business of the Chrome Steel Works, has changed its name to the Chrome Steel Corporation. Sidney C. Myers of San Francisco, who was for many years representative of the Chrome Steel Works, will be western representative for the new corporation.

Speeder Machinery Promotes H. W. Parsons

The Speeder Machinery Corporation, manufacturers of speeder cranes and shovels, announces the appointment of H. W. Parsons as assistant and general sales manager. Parsons started to work for the Speeder Corporation several years ago as a shop laborer, becoming foreman of the riveting and welding department, factory service man, salesman, then district sales engineer in the Pacific Northwest, the position he left when he was given the assistant sales managership with headquarters at the factory. He was succeeded as district sales engineer in the Pacific Northwest Territory by B. C. Larrabee, who will make his readquarters at Portland, Oregon.

Chicago Offices Moved

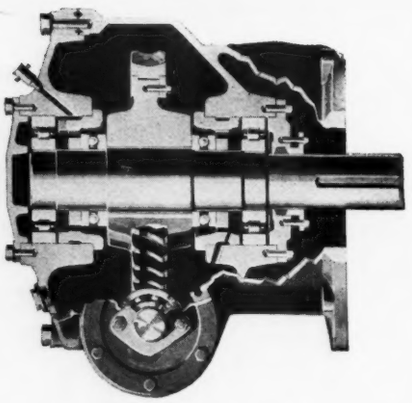
The Thew Shovel Company and The Universal Crane Company announce the removal of their Chicago sales offices to Suite 2046, Builders Building, 228 North La Salle Street, Chicago, Illinois

Construction Machinery Appoints Distributors for Texas

The following firms will handle the complete line of the Construction Machinery Company, including Wonder tilting mixers, Marsh-Capron drum type mixers, CMC builders' hoists and pumps, as well as Kern variable speed drag scraper power units: The R. B. George Machinery Company, Dallas; The McMillin Machinery Company, Houston; The B. P. Clark Machinery Company, San Antonio; Plains Tractor and Implement Company, Amarillo; West Texas Tractor and Machinery Company, Plainview; Golay-Kirkpatrick Tractor and Implement Company, Harlingen.

Agitator Drives With IXL Speed Reducers

The agitator drive speed reducing unit has found favor in every industrial plant using vertical drives and where the introduction of some form



Vertical Reducer Showing Internal Construction

of speed reducing equipment is required to replace the old style belt pulleys, chains and open gearing.

To meet these growing demands for a compact enclosed unit drive for operating mixers, agitators, and paddles, Foote Bros. Gear and Machine Company has added a complete line of vertical worm gear speed reducers which are made in two different types, either the Type S commercial worm or the Hygrade worm gear reducer, which is recommended for high efficiency and long life.

IXL speed reducers are fully enclosed, self-lubricating and dust-proof, and decrease the cost of transmitting power. These speed reducers permit the use of standard speed motors which are less expensive than vertical slow speed motors and make-shift combinations of gears, chains or pulleys.

The vertical speed reducers are similar to the standard horizontal type reducer, except that a flange base is provided so that the reducer lays on its side with the driving shaft at the right, the work gear revolves horizontally and the slow speed shaft is in a vertical position. This shaft can be extended upward or downward as the conditions may require, so that the reducer can be located under or above the machine to be driven. The construction is similar to the standard type reducer embodying a cast-iron case, treated to prevent flaking, with a removable top cover.

The removable end plugs have oil-tight stuffing glands and oil seals at each end of the worm. The base is cast integral with the case to provide suitable mounting either on the floor or by hanging from the ceiling.

The worm is made of a high grade alloy steel, carbonized, hardened, ground and polished. The worm gear can be furnished either of semi-steel or bronze. Bronze is recommended by the manufacturer because of lower coefficient of friction with less heating loss and longer life, the semi-steel being furnished at the customers' risk.

Ball thrust bearings are provided at each end of the shaft to take up any upward or downward thrust. They are compact, noiseless, efficient, dependable units, built to meet every modern agitator problem.

A Light Weight Drifter

The Gardner-Denver Company is distributing an illustrated 4-page bulletin that is concerned with its Model 107 drifter. It was primarily designed for drifting and cross-cutting in soft and medium hard formations, in which its high speed, perfect balance, light weight and lack of vibration make it a satisfactory and reliable machine. The bulletin gives the construction and class of materials used in complete detail and outlines the underlying principles of its design.

Gauge for Watching Grades of Sand

Klesch and Company, which manufactures and markets all classes of engineering supplies, is distributing a new bulletin entitled "Watch Your Sand." The instrument is known as the Universal sand tester, which is claimed to be simple, efficient, and gives a complete granulometric analysis with a permanent graphical record. This firm has recently published a 336-page book for the use of technical organizations, requiring such a service.

Dust Recovery Bulletins

The Dust Recovering and Conveying Company is distributing two 4-page illustrated Bulletins 52 and 53, which are concerned with dust recovering operations. Number 52 contains an interesting article by H. E. Macomber, engineer, Detroit Edison Company, which discusses the elimination of dust in the plant. Number 53 gives a plant layout for such an operation and outlines the equipment entering into the actual successful dust recovering process.

All Purpose Conveyors

The Northern Conveyor and Manufacturing Company is distributing a 16-page illustrated publication which describes the construction of Northern conveyors. These are fabricated of the materials most applicable to the required duties and are made in any size or length for handling any material.

Pennsylvania Pump Appoints Mexican Agent

The Pennsylvania Pump and Compressor Company announces the appointment of the Wells Fargo and Company, Express, S. A. Apartado Postal, 361, as its agent for the Republic of Mexico.

New Pump Handbook

The second edition of the Novo Pumping Handbook, published by the Novo Engine Company has just been received. It consists of 40 pages and is profusely illustrated with photographs, drawings, tabular matter and data of general interest to operators using pumps. While the book is primarily concerned with the products of the Novo Engine Company, it is of considerable value to users of all types of pumps. This book was produced because of the widespread interest in its predecessor, the Novo Hoisting Handbook.

A Screen Folder

The Traylor Vibrator Company is distributing an illustrated 4-page folder with additional information on the "screen supreme." It is claimed to be exclusive in design, simple to operate and install and no mechanical moving parts to cause excessive wear from abrasive materials, water, dust, and lack of lubrication. No vibration transmitted to screen supports or building and low power consumption. The two screens discussed are the FB2, with a clean screen surface measuring 41 by 68 inches, supplied with either single or double decks, and the FB4, with a clear screen surface of 47 by 78 inches, either single or double deck.

Osgood Company Acquires Power Manufacturing Company

As a result of negotiations completed May 18, ownership and control of the Power Manufacturing Company of Marion, Ohio, was acquired by the Osgood Company of the same city. By this transaction, the Osgood Company comes into possession of all property of the Power Company, including the plant real estate and buildings which house several outside agencies. The Power Company has 45 agencies in different parts of the United States.

In announcing the purchase, C. A. Owens, president of the Osgood Company, pointed out that the acquisition of the new property is regarded as exceptionally advantageous in view of the increased use of oil engines on excavating machines and in general stationary work. Purchase of the Power Manufacturing Company makes a total of five importat Marion concerns under the control of interest headed by Mr. Owens. These include the General Excavator Company, Alloy Cast Steel Company and the Commercial Steel Company. Offices of the Power Manufacturing Company will be transferred to the Osgood office building.

Alemite Changes Corporate Name

The name of the Alemite Manufacturing Corporation has been changed to Alemite Corporation. The word manufacturing was expunged from the name solely as a courtesy to the Alemite Die Casting and Manufacturing Company, which claimed that the word manufacturing in the Alemite name was creating a certain amount of confusion to the business of that company because of the alleged similarity in names.

Telsmith Publications

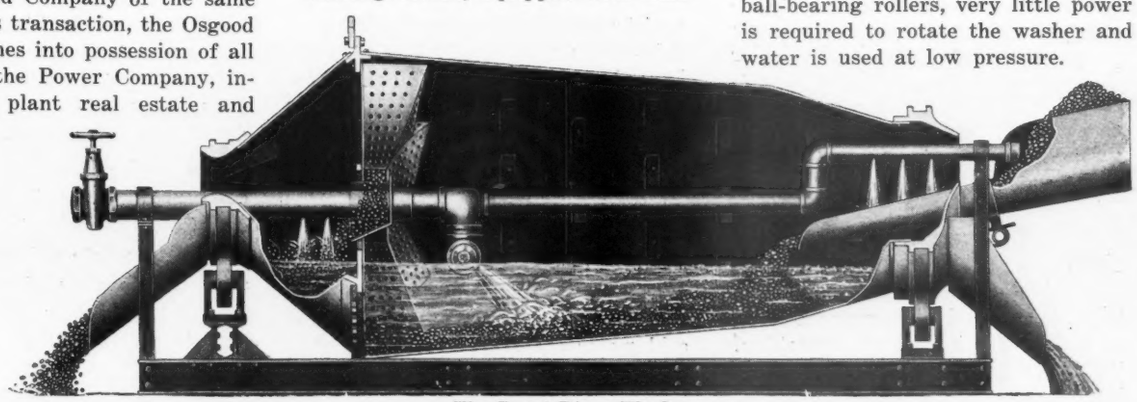
The Smith Engineering Works has recently issued two new booklets, one entitled "New Telsmith Equipment, 1929," consisting of 8 illustrated pages, and the other "Telsmith Jaw Crushers," containing 12 illustrated pages. Among the machines described in the first mentioned booklet is the balanced vibrator screen, which is an inclined double-deck outfit actuated eccentrically. By reason of opposed eccentrics, the upper tray rises as the lower one goes down and vice versa. The new Telsmith-Hercules washing screen, equipped with Timken tapered roller bearings, is given considerable space and the screw rewasher, designed to supplant sand tanks in pits where the sand contains so much dirt or fine sand that satisfactory results are not obtained with a gravity tank.

The second mentioned booklet, or Bulletin 264B, is concerned only with jaw crushers, which are said to be rugged, compact, foolproof and 90 per cent steel. There are a minimum of parts, no levers or toggles, and an improvement in design that shortens and strengthens the crusher structure, lowers the flywheels below feed level and reduces the weight in reciprocation and the number of parts subject to wear. This bulletin contains some valuable information and includes tables of sizes.

A New Gravel Washer Of Unusual Design

A. M. Lockett and Company, Ltd., contracting and mechanical engineers, has developed a gravel washer, known as the Pearl River washer, especially to meet the conditions found in that part of the country. Largely due to the lumbering activities which form the main industry along the north Gulf coast the deposits of gravel are intermingled with large quantities of bark, twigs and leaves. The washer was designed to remove this trash as well as any clay or dirt and has been very successful.

The barrel of the washer is in the form of a double cone and runs on a set of ball-bearing rollers at each end. The gravel enters the longer end of the barrel and gradually works its way to the point of largest diameter, being subjected all of the time to scrubbing by a stream of water traveling in the opposite direction. The trash is carried by water out of the same end in which the gravel enters. The gravel is lifted by buckets through a central opening in a diaphragm between the two cones into a shorter cone from which it is discharged by angle plates. Due to the ball-bearing rollers, very little power is required to rotate the washer and water is used at low pressure.



The Pearl River Washer

Jeffrey Manufacturing Company, Limited, Incorporated In Canada

The Jeffrey Manufacturing Company announces the incorporation of the Jeffrey Manufacturing Company, Limited, at Montreal, Quebec. This new Canadian company has its main office and works in Montreal; a branch office in Toronto; and a mining supply warehouse in Calgary, Alberta.

The complete line of Jeffrey chains, portable loaders, and elevating, conveying, pulverizing, crushing and mining machinery which for more than fifty years has been manufactured at Columbus, Ohio, will in the future be supplied by the new Canadian company.

The Jeffrey Manufacturing Company recently acquired the Galion Iron Works and Manufacturing Company of Galion, Ohio, which is one of the largest and oldest manufacturers of road machinery, including a full line of gasoline and steam road rollers, leaning wheel road graders, tractor power graders, road drags and road plows. This company also manufactures cast-iron and special non-corrosive galvanized culverts. In addition to the Jeffrey line, it is the intention of the Jeffrey Manufacturing Company, Limited, to supply the complete line of Galion machinery from its Canadian plant.

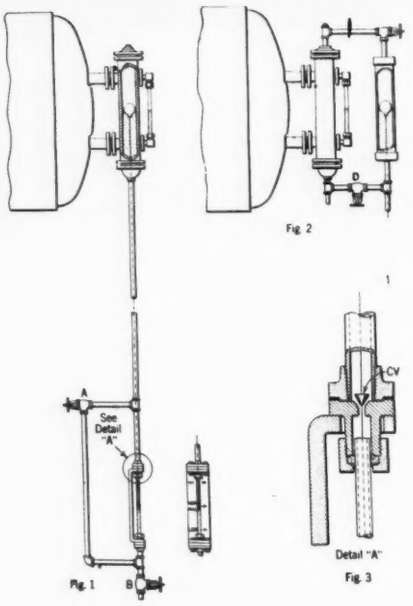
The officers of the Jeffrey Manufacturing Company, Limited, are: R. W. Gillispie, president; R. H. Ross, treasurer and manager; and F. N. Diehl, secretary.

Water Level Indicator

A simple device which permits the placing of water level indicators at any desirable location or elevation has been recently put on the market by Combustion Engineering Corporation.

Fig. 1 shows how this water level indicator operates and why it is possible to situate it at any convenient location. The usual water column is shown connected to the boiler drum. Inside the water column is a non-corrosive float suitable for the maximum working pressure for which the boiler is designed. This float is direct-connected by means of a non-corrosive wire extending downward through a small pipe to an indicator in the water glass. The circuit around this indicator is filled with cold water which has no corrosive effect on the glass.

The indicator is so adjusted that when the float in the water column on the drum is in its normal position, the indicator within the lower glass is also in the center of the glass, its normal level condition. The indicator consequently fluctuates correspondingly with the up and down movement of the water column float at the drum.



It is possible to locate the indicator to meet any local conditions. If it is not practical to drop the indicator vertically from the water column on the drum, arrangements are easily made whereby the water column can be placed inside the drum, or, as shown in Fig. 2, horizontal extensions of any length can be made to bring the water column to any desired position.

To prevent leakage in case the water glass should be broken, an automatic shut-off valve is placed in the circuit directly above the glass. This conical valve is attached to the wire between the water column and the water level indicator in such a position, as shown in Fig. 3, that when the glass is broken, and the water released, the valve is forced into the valve seat thus closing the cold water circuit.

After a new glass has been put in place, valve "A," Fig. 1, is open, valve "B" remaining closed thus equalizing the pressure above and below the valve. The float then returns to the position of the water level and in so doing, lifts the valve "CV" which allows the water to again fill the indicator gage glass.

The device is especially desirable from a convenience standpoint and also, because it operates in a cold water circuit, it eliminates the continual replacing of glasses on ordinary water columns, which are eaten away and broken so easily by the corrosive action of the hot water. By having cold water only, in contact with the glass, the usual round glass is suitable for exceedingly high pressures.

Pack-House Dust Collecting Units in Demand

"The tendency in dust elimination is now towards the cleansing of the air of the pack-house," says Mr. Eiben, of Northern Blower Company. "This is largely due to the fact that in a large proportion of the existing cement mills the more obvious sources of dust-waste—the crushing, raw and finish grinding departments—have already been taken care of, except of course for extensions and new machinery which need dust-collecting units." As an example of this tendency, Mr. Eiben cites the fact that out of the six orders for Norblo dust-collecting equipment recently received, only one (the Castalia Cement Company, Castalia, Ohio) was for finish grinding mills; whereas, the Detroit and Milwaukee plants of the Petoskey Transportation Company, the Wisconsin Lime and Cement Company, Chicago, the Great Lakes-Lehigh Portland Cement Company, Cleveland, Ohio, and the Cowell Portland Cement Company, Cowell, California, are ordering Norblo units for collecting pack-house dust.

Pivoted Bucket Carriers

The Chain Belt Company is distributing its Catalog 152 that illustrates and describes Rex pivoted bucket carriers. The Rex arm, a forged steel bar extension that carries the bucket on a through rod beyond the articulation point of the chain, is said to be the key to the simple, perfect and positive action of the carrier. It makes over-lapping and discharging automatic, without the use of lap-charging devices. The bucket may be loaded and discharged at any point on any horizontal run by the rolling cam action.

Explosives Literature Distributed

E. I. duPont de Nemours and Company has specialized its previous work in the March 1929 number of the Explosives Service Bulletin. Because of the increasing number of requests for information concerning the previous issues of the bulletins, a list of the different bulletins issued has been compiled. The list is grouped first according to date of issue and, second, according to class of work to which they are applicable. None of these bulletins contain advertising but are devoted exclusively to the technical subjects being discussed.